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ABSTRACT

A study sought to identify correlations among the characteristics and work values of vocational students enrolled in two community colleges in Pennsylvania. Six research questions were posed to 310 students enrolled in Harrisburg Area Community College and 377 students enrolled in Williamsport Area Community College. The study population represented a stratified random sample of individuals enrolled in five vocational study categories. Seven criterion variables were analyzed, and student characteristics were examined from the point of view of eight variates. Weak, but consistent relationships were found to exist among the students' characteristics and work values. Male and older vocational students valued satisfaction and accomplishment less than their female and younger counterparts did. Students who had more work experience and who were enrolled in industrial technology programs valued prestige and money more than the other groups surveyed. Students in cooperative education programs valued contribution more than those not enrolled in such programs; similarly, female students valued contribution more than did males. White students valued job advancement more than nonwhite students, and older students and male students valued this advancement less than younger and female students. (Appendixes to this report include the work value questionnaire, a copy of Duncan's Socioeconomic Index, and a description of the occupational areas included in the five subject areas examined.) (MN)

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THE PENNSYLVANIA STATE UNIVERSITY DEPARTMENT OF VOCATIONAL EDUCATION

FINAL REPORT

RELATIONSHIPS AMONG CHARACTERISTICS OF POST-SECONDARY VOCATIONAL STUDENTS AND THEIR WORK VALUES

TIAN-YNAN WU, INVESTIGATOR
DAVID L. PASSSMORE, MAJOR ADVISER
DIVISION OF OCCUPATIONAL AND VOCATIONAL STUDIES

PROJECT NUMBER
83-5003

THE PENNSYLVANIA STATE UNIVERSITY
UNIVERSITY PARK, PENNSYLVANIA

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DISCLAIMER

This activity was supported in whole or in part by the United States Office of Education, Department of Health, Education, and Welfare through the Pennsylvania Department of Education (PDE), Bureau of Vocational Education. However, the opinions expressed herein do not necessarily reflect the position or policy of the United States Office of Education, Pennsylvania Department of Education (PDE), or the Bureau of Vocational Education and no official endorsement should be inferred.

ABSTRACT

Changes in technology, the economy, society, and the family have had a dramatic impact on the nature, meaning, and values of work. Increasing interest in the study of work values has become apparent in the field of vocational education because these values, as suggested by the literature, are important determinants of individual career behavior, career development, and career choice. This study was designed to determine community college student characteristics, work values, and the relationships among these characteristics and work values. In the study, six research questions were posed in a logical sequence to meet these ends, and the Maryland Work Value Inventory was used as the research instrument. The sample consisted of 687 vocational students enrolled during Fall Semester 1984 in two community colleges in Pennsylvania; 310 subjects were drawn from Harrisburg Area Community College and 377 subjects from Williamsport Area Community College. The strata from the stratified random sampling procedure represented five study categories from which equal numbers of subjects were drawn: (a) industrial technologies, (b) agricultural technologies, (c) business technologies, (d) health technologies, and (e) miscellaneous technologies. In this study, seven criterion variables were (a) satisfaction and accomplishment, (b) money and prestige, (c) contribution to society, (d) status with employer, (e) need for work, (f) avoidance, and (g) job advancement. The variates examined included (a) sex, (b) race, (c) age, (d) work experience, (e) participation in cooperative education programs, (f)

occupational aspiration, (g) vocational area, (h) socioeconomic status, and (i) reason for entering community college.

Community college students tended to be white and, on the average, between 17 and 30 years of age. The students' social status was classified as skilled and semiskilled working class. They had been working for 3.8 years, had joined cooperative education programs, and had middle occupational aspirations. Among the characteristics, sex was closely related to occupational aspiration, vocational area, and reason for entering community college. A factor analysis of the original instrument resulted in the seven new work values which were used as the criterion variables in this study.

Weak but consistent relationships existed among community college student characteristics and the students' work values. Male vocational students valued satisfaction and accomplishment less than female vocational students. Older community college students tended to value satisfaction and accomplishment less than younger students. Students with more work experience and who were industrial technology majors valued money and prestige more than students with less work experience and who were in majors other than industrial technologies. Older students valued money and prestige less than younger students. Students in cooperative education programs valued contribution to society more than those not enrolled in such programs, and female students valued this contribution more than male students. Students with more work experience valued status with employer more than those with less work experience, and younger students valued this status more than older students. Students with more work experience and who

were younger valued need for work more than those with less work experience and those who were older. Students with work experience and those who were industrial technology majors were more likely to avoid the results of not working, and female students and younger students were more likely to avoid these results than male students and older students. White students valued job advancement more than nonwhite students, and older students and male students valued this advancement less than younger and female students. In addition, work values were not stable across the two community colleges, and it is evident that students in different vocational areas appeared to occupy different work value patterns.

Based on the findings of this study, it is suggested that the new work value categories should be used in future study of the work values of community college students. Studies examining the relationships among work values and students' characteristics at other institutional or technical levels are recommended. Relationships between personality factors other than work values and the students' characteristics should be investigated. A longitudinal study, studies with more student characteristics, and qualitative studies exploring the relationships among community college student characteristics and the students' work values should be pursued based on different samples.

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CHAPTER I

THE PROBLEM

Background of the Problem

Changes in technology, the economy, society, and the family have had a dramatic effect on the nature, meaning, and values of work. The term "work" no longer has the same connotation for each person. Its meaning has increased in complexity and implies a set of expectations, needs, and values to each individual. Increasing interest in the study of work values has become apparent in the field of vocational education because work values are suggested as important determinants of individual career behavior, career development, and career choice (Himes, 1968; Kinnane & Suziedelis, 1962; Maslow, 1954; Smith, 1975; Terkel, 1974).

Historically, the earliest accepted objective of publicly financed vocational education in the United States was to meet society's needs for skilled workers through the enactment of the Smith-Hughes Act of 1917 (Evans & Herr, 1978, p. 4). With the advent of the Vocational Education Act of 1963, this traditional objective shifted "from filling the requirements of the labor market to meeting the needs of people" (Mangum, 1968, p. 1). This shift placed an emphasis on increasing the options available to each student instead of merely providing skilled workers for industry.

This new emphasis and the subsequent career education movement

provided an environment conducive to the development of numerous studies on work values. The concept of career education originally was introduced by S. P. Marland, Jr., a former U.S. Commissioner of Health, Education, and Welfare. A more comprehensive definition of the term "career education" was given by Hoyt, Evans, Mackin, and Mangum (1974):

> Career education is the total effort of public education and the community to help all individuals become familiar with the values of a work-oriented society, to integrate these values into their personal value systems, and to implement these values into their lives in such a way that work becomes possible, meaningful, and satisfying to each individual. (p. 15)

The growth of career education also resulted in the formulation of some important concepts and definitions. Hoyt et al. (1974) asserted that career development referred to "the total constellation of events, circumstances, and experiences of the individual as he makes decisions about himself as a prospective and as an actual member of the work force" (p. 136). Katz (1973, p. 89) and Herr and Cramer (1979, p. 66) suggested that career choice should include all choices among educational opportunities, occupational options, and life styles. Hoyt et al. (1974) further noted that the effectiveness of career education and vocational education ultimately would be evaluated by the degree to which students assume responsibility for their own decisions. Education is to educate the "total" individual. Thus, one of the career education learner outcomes has been to predict and measure individuals' career behaviors and progress on career development and choices. Theoretical and empirical evidence support the statement that work values should be examined as correlates of

career behavior, development, and choice. Hence, it is meaningful to adopt them as a set of valid measurements for educational outcomes.

In post-secondary vocational education, the same philosophy of educating "total" individuals to meet their human needs recently was outlined in broad scope, with the most persuasive credibility for the entire post-secondary scene, by Chickering and Associates (1981). They explained that counseling had made significant contributions in achieving its goal of helping students meet their personal, instruction, and collaboration skills. However, some problems have been evident in counseling during the last decade (Robbins, 1983). The tracking of students is one problem area. According to Karabel (1972) and Zwerling (1976), tracking is common when students choose their vocational areas and occupational choices. The term "tracking" refers to the fact that many counselors look at what students realistically can accomplish at the college level and in the work world. For example, available evidence might indicate that a student could achieve a certain level of attainment. If the student has higher aspirations than available evidence shows, counselors may encourage him or her to lower aspirations in settling for programs of studies leading to low-level jobs. Some critics point out that the lack of knowledge and experience in program development has been one factor causing such malpractice among counselors in post-secondary vocational institutions (Fenske, 1980; Robbins, 1983).

In addition, a report by Kramer, Berger, and Miller (1974) indicated that the most prevalent problem perceived by college students has been vocational choice and career planning. In this

report, career planning is defined for a series of occupational and educational opportunities in one's lifetime. Other research supported this report by concluding that approximately one-half of American college-bound students need to be assisted in career development and choice (Snyder, Hill, & Derksen, 1972; Williams, Lindsay, Burns, Wychoff, & Wall, 1973). Speaking specifically on the counseling problem in the community college, Ginzberg (1971) observed that the prestige associated with an academic rather than a technically oriented program has led many administrators and faculty to downgrade students' guidance needs. The lack of knowledge and empirical results relative to the work values of post-secondary vocational students probably is the main factor preventing these administrators from providing healthy guidance practices according to Ginzberg (1971).

Zytowski (1970) defined work values as "a set of concepts which mediate between the person's affective orientation and classes of external objects offering similar satisfactions" (p. 176). After the review of six work value instruments, he used the trichotomous model of Ginzberg, Ginzberg, Axelrad, and Herma (1951) for categorizing work values presented in the related literature. The work values of security, prestige, economic return, achievement, and recognition were categorized as extrinsic factors; the work values of surroundings, associates, management, and supervisory, as concomitants; and the work values of independence, altruism, creativity, way of life, intellectual stimulation, and variety, as intrinsic factors. On the other hand, Kazanas (1978) used independence, satisfaction, altruism, self-discipline, self-realization, interesting work, and

self-actualization to refer to the intrinsic factors, while using economic independence, working conditions, prestige, interpersonal relations, social status, recognition, and security to describe the extrinsic factors. Thus, different inventories adopting arbitrary items and numbers of items are commonly seen in the literature related to work values.

Significance of the Study

According to Lombardi (1978), the rapid growth in enrollments in occupational programs since the early 1960s signaled a new direction for the community college movement. The community college has shifted from a predominantly academic-oriented institution to an occupational-oriented institution. In terms of credit enrollment, occupational or vocational education is becoming the major function of community colleges. Therefore, post-secondary vocational education has been considered as a future trend in vocational education (Swanson, 1981).

Along with the drastic expansion of post-secondary vocational education, changing student characteristics, including older, female, minority, and part-time students, brought very different needs into the college scene. In order to meet their educational and philosophical needs, career counseling or guidance becomes crucial to the development of students as persons, rather than students' dependence upon their intellectual or technical training alone. The examination of one of the personality determinants--a set of work values--can assist counselors in diagnosing students' perceptions

about work and expectations of work. In particular, the study of the relationships among the characteristics of the post-secondary students and their work values can help us better understand the influence of those students' characteristics on work values. Thus, the prediction of occupational choice and the understanding of career behavior can be enhanced greatly by the results.

Considerable importance has been attached to individual self-concepts, developmental experiences, personal history, and the psychological environment of the individual as major determinants of the career behavior process, according to Herr and Cramer (1979, p. 68). Therefore, this study is designed to yield two major contributions. First, the study would attempt to provide an understanding of the relationships among work values and post-secondary vocational student characteristics, which may assist administrators, educators, and counselors in examining the effect of student characteristics on work values and designing adequate guidance programs to meet students' needs. Second, the knowledge resulting from this study can be related to career behavior, career development, and career choice, which will benefit the establishment and improvement of current career counseling programs, recruitment programs, placement services, and career planning in post-secondary vocational institutions.

Previous research has indicated that work values are associated with students' sex, race, age, work experience, vocational area, and socioeconomic status (Astin, 1958; Berry, 1981; Crites, 1969; Daly, 1983; Davis, 1965; Eyde, 1960; Gray, 1963; Perrone, 1973; Rosenberg,

1957; Schwarzweller, 1960; Singeer & Stefflre, 1954a, 1954b; Wagman, 1965). Considerable empirical work has focused on the study of adolescents at the secondary school level. However, few studies have related directly to work values of post-secondary vocational students. The examination of the relationships among a set of student characteristics and work values in the post-secondary level is scarce as well in the research literature.

Statement of the Problem

The purpose of this study is to investigate the relationships among characteristics of vocational students enrolled in community colleges and the students' work values. With this in mind, the present study attempted to provide answers to a number of important research questions, including:

1. What are the current characteristics of community college students?

2. What is the structure of the correlates of work values for community college students?

3. What are the patterns of work values among community college students?

4. What are the relationships among community college student characteristics and the students' work values?

5. Are there any differences in work values among community college students studying various vocational areas?

6. Are community college students' work values stable across two different community colleges?

CHAPTER II

REVIEW OF LITERATURE

Although the literature pertaining to work values is large and refined, relatively few studies have dealt with the topic of post-secondary vocational student work values. Even fewer research studies have examined the relationships among characteristics of post-secondary vocational students and these students' work values. However, the literature reviewed provided a concrete background for subsequent design of this study. The following major themes of this chapter are relevant to work values, work values of post-secondary vocational students, and the characteristics of post-secondary vocational students:

1. The changing values of work;
2. Theories related to work values;
3. Studies of the stability and patterns of work values;
4. Work values of post-secondary vocational students; and
5. Literature related to post-secondary vocational student characteristics.

The Changing Values of Work

By Singer and Stefflre's (1954b) notion, work values and desires pertained to the basic question, "What do you really want from a job?" (p. 419). This notion complements Zytowski's (1970) statement that a value generally is descriptive either of the internal state of the

person (needs), or the kind of reward or satisfaction gratifying that internal need. In addition, a conceptualization of work values in the process of vocational choice has been pointed out by Ginzberg et al. (1951). They believed that the foundation for an effective occupational choice should lie in the values and goals of an individual, because these values and goals enable the individual to order current activities with reference to the future. The essential element in occupational decision-making is the effective linking of present action to future objectives. Capacities and interests should be considered, but the individual might not make an effective occupational choice unless there is support from his or her value scheme.

Katz (1963) likewise recommended that knowledge of the hierarchy of work values could be used for a more complete understanding of the process that would lead to career decision-making. Therefore, work values are closely related to a person's psychological orientation to vocational behavior, vocational choice, and career decision-making.

Today, the study of changing work values becomes even more important than before because of new technology developing at an unprecedented pace. In a discussion of the importance of work values, Super (1957) contended that assessments of needs and traits which define a person's personality might help us understand the makeup of people, but fail to predict educational and occupational behavior, while values and interests are closer to life and, hence, are more appropriate to explain motivation as it relates to the choices and performance of students and employers (Super, 1957). Moreover,

Zytowski (1973) commented:

> Understanding the work values of a student or a client in educational and vocational counseling or if an applicant for a position in business or industry is an important aid in clarifying goals and determining the psychological appropriateness of a given type of education, training, or employment. (p. 191)

Dipboye and Anderson (1959) held the same opinion as Zytowski (1973) in this regard.

Furthermore, two other reasons for explaining the importance of work values are noteworthy. First, the transition from one job to another would be considerably easier if an individual was located on a work-values spectrum and other occupations were understood in terms of need satisfaction. For example, the careers of engineers and teachers were found to provide different satisfactions respectively (Dunnette, 1957; Merwin & DiVesta, 1959). Second, the concept of work values has been used to explain a person's level of job satisfaction and to forecast his or her occupational entry. No other constructs have played these dual roles successfully. Interest appeared to predict job entry but was not a good predictor of satisfaction. Another construct, job satisfaction, seemed not to predict occupational choice (Lelton, 1960; Lewis & MacKinney, 1961).

A Historical Overview of Work Values

A historical overview of work values can facilitate understanding of value changes and explain in part the question, "Why do people work?" In early civilization, work was a curse (Tilgher, 1958). Aristotle declared that just as the ultimate goal of war was peace,

so the object of work was leisure. Biblical or Christian views of work were similar to these Greek concepts. There was no work in the Garden of Eden, and toil was a curse imposed upon Adam and Eve as a symbol of their punishment from God. At that time, the meaning of work was derived primarily from two sources: social and religious (Wrenn, 1964). There were no "meaningful" and "challenging" values attached to work.

In the Renaissance and Reformation, the transformation of work's image was, to a large extent, a secular outgrowth of technological, demographic, and economic changes. Work became an activity in which many took pride and enjoyment, and was a rightful duty for all (Levitan & Johnson, 1982). This was the beginning of the work ethic.

The meaning and value of work began to disintegrate as the nature of work continued to change during the Industrial Revolution. Although work was still the central activity by which individuals gave meaning to their lives, automation and assembly lines created the alienation of workers. Work alienation manifested from workers' loss of control over their jobs, social isolation, and dissatisfaction (Levitan & Johnson, 1982). The traditional work ethic had become very prevalent after the Industrial Revolution. Work was seen as possessing personal as well as financial rewards for the worker, and the phrase "A task well done was its own reward" had real meaning. Persons who value the work ethic, want to work, prepare themselves for work, and actively seek work. Nevertheless, the traditional work ethic has recently been undergoing a drastic transformation due to the widely distributed affluence among American workers. Having reviewed

some studies on workers' job satisfaction, Herr and Cramer (1979) noted that American workers sought more than remuneration from their work; these laborers expected that work should provide not only food and shelter, but should also be satisfying and meaningful to them. Herzberg (1966) supported the concept of change, and suggested "way of life" and "avoidance of work" as two new work values. Later, Hoyt (1973) proposed that the term "work ethic" should be replaced by the term "work values," because the word "ethic" carried strong connotations of social obligations imposed on the individual. On the other hand, the word "values" carried equally strong connotations of individual choice and self-determination.

Contemporary Meaning of the Work Ethic

Much research has resulted in the fact that the traditional work ethic has been declining among workers while leisure time has become increasingly important. To say that work is disappearing or that a society having leisure as its principal characteristics has emerged is still premature (Levitan & Johnston, 1973; McMahon, 1970). In essence, work might constantly change in its content and occupational structures, but there is no evidence to show that work would not be an important corollary defining personal life styles for the foreseeable future (Herr & Cramer, 1979). Studies on contemporary work values in American society are available in the literature and support the changing scene of work values. The contemporary work ethic was found to stress the importance of creative, self-directed, and challenging work. The great importance people place on this type of work

indicates that the dislocation between work expectations and work realities have significant consequences for the American workers (Gaschler, 1977). Boer (1978) pointed out that in the present Western world work determines the income, status, and prestige of an individual. Also it regulates one's daily schedule, influences social contacts, and offers opportunities for self-development. Along the same line, Yankelovich and Lefkowitz (1982) found that today's Americans expect self-fulfillment and quality of life from work in addition to financial security. As a result of their work expectations, new work values have emerged. Among the most important expectations are the link between paid work and autonomy, changing sex-linked roles in marriage, the adherence of inherent dignity to meaningful work, and more stress on the quality of working life (Yankelovich, 1981).

Studies of workers' work values have revealed value differences between lower-class workers and other workers. Lower-class workers are interested in having a secure job, good salary, congenial co-workers and supervisors, decent working conditions, and fringe benefits (Blood & Hulin, 1967; Centers & Cantril, 1946; Chinoy, 1952; Davis, 1946; Empey, 1956; Form & Geschwender, 1962; Hyman, 1966; Inkeles, 1960; Katzell et al., 1961; Kohn & Schooler, 1969; Lyman, 1955). On the other hand, data have indicated that middle- and upper-class workers are more interested in the intrinsic nature of their work, such as having interesting job experiences, responsibilities, opportunities for advancement, personal growth, and self-actualization (Centers, 1948; Centers & Bugental, 1966;

Friedlander, 1965, 1966; Kaplan et al., 1969; Morse, 1953; Pellegrin & Coates, 1956-57; Tausky, 1967). Despite the divergent orientations among social classes, research supports the statement that a commitment to work has been expressed among the general population irrespective of social class (Friedmann & Havighurst, 1954; Kaplan & Tausky, 1974; Morse & Weiss, 1955; Tausky, 1969).

Theories Related to Work Values

Although there were divergent views on work values in the literature, the concept of work values has been considered to be a construct or one of the personality factors affecting vocational behavior and development (Herr & Cramer, 1979). A theoretical framework of work values can provide us with some insight into the genesis of the value systems operating in the modern world.

Roe (1956) and Rosenberg (1957) have speculated on the origin of the work value system. Rosenberg (1957) maintained that values might result from needs, by which he presumably meant deficit states, or that values might be the results of the encultration process. Roe's (1956) formulation referred specifically to needs, which she felt determined interests, attitudes, and other personality attributes. Both Roe's (1956) and Rosenberg's (1969) propositions were supported by Zytowski (1970) and Katz (1969). Zytowski (1970) described work values as the internal state or motivating force of a person. Katz (1969) referred to work values as the characteristic outer expression and culturally influenced manifestation of need or, more specifically, as feelings about outcomes or results, such as the importance,

purpose, or worth of an activity (p. 461). The needs which were asserted to be important by all these writers and the theories of motivation became the major focus of this section, as based upon a hierarchy of needs by Maslow (1954).

The order of Maslow's hierarchy was (a) physiological needs, (b) safety and security needs, (c) need for love, companionship, and affection, (d) need for esteem of self and from others, and (e) need for self-actualization. Maslow (1954) suggested that individuals react to drives as an integrated whole and are impelled by ultimate goals or needs which might be conscious or unconscious in nature. He posited that an individual is never satisfied and that wants seem to arrange themselves in some sort of hierarchy of prepotency. The prepotent needs are more urgent and insistent than the other underconditions of equal deprivation. Until the prepotent needs are satisfied, the next higher needs become salient to the individual as the primary motivators (Hall, 1975). Furthermore, development of the individual's motivational structure is not a matter of sharp, discontinuous steps, which mean that each lower need does not have to be completely gratified before the next higher need emerges. Rather, predominance among the different needs shifts gradually from one need to another (Krech, Crutchfield, & Livson, 1974).

Maslow's (1954) hierarchy-of-needs theory received much criticism on both practical and theoretical grounds. A major complaint was that the theory might not be accurate for most of the population. Actually, there have been some important research findings that have indicated major changes in the order that Maslow (1954) posited. Some

examples of factors which affected the hierarchy of needs were age differences among miners, sexual differences, and differences in the cultural backgrounds of blue-collar workers. The needs of miners reached a peak during the twenties and tapered off as the person became older (Miner, 1969). Due to sociocultural definitions, females have been more concerned with fulfilling social needs, while achievement and esteem have meant more to men. The greater male aggressiveness appears to stem from both biological and social origins (Anastasi, 1958). In addition, it was sometimes found that the need for self-actualization either was not present or was actively rejected among blue-collar urban workers (Hulin & Blood, 1968). In spite of all the criticism, Maslow's (1954) needs hierarchy theory has been recognized as the most developed and also as the most influential in shaping the concepts of needs because of its consistency in the application of the theory (Herr & Cramer, 1979).

Roe (1956) applied Maslow's theory of prepotent needs to career behavior and shaped her own theory of needs, in which she held that personal needs and values underlaid occupational choice and attainment. Roe's (1956) theory with regard to vocational behavior and choice included four elements: (a) Early chlidhood experiences influence vocational choice, (b) the manner in which the parents interact with the child affects the selection of an occupation at the time the child grows up and chooses an occupation, (c) individuals seek occupations which can satisfy their respective needs, and (d) an individual's genetic propensities influence both his or her occupational choice and the needs hierarchy, or value orientation.

Roe (1956) combined two personality theories in the application of those theories to vocational behavior and career development. She first extended Murphy's theory of the canalization of psychic energy and emphasized the relationship between early childhood experiences.

> This portion of the theory states that each individual's genetic background underlies his abilities and interests, which in turn are related to vocational choice. Further, each individual expands his psychic energy in a manner not entirely under his control, and this involuntary expenditure of energy, which is presumably genetically determined, is influenced in the development of the individual's abilities. (p. 17)

The second personality theory is Maslow's theory of prepotent needs which shape vocational behavior. Osipow (1968) has described the theory in terms of three propositions: (a) satisfied needs do not become unconcious motivators; (b) high-order needs that are rarely satisfied will disappear, while lower-order needs will become dominant motivators if rarely satisfied; and (c) needs that are satisfied after delay will become unconscious motivators in some cases. In addition to these two personality theories, Roe (1956) further accented the importance of genetic factors as these factors interacted with needs hierarchies in the process of determining vocational choice. Osipow (1968) paraphrased Roe's concept of personality differences: "In other words, given equal endowments genetically, differences in occupational achievement between two individuals may be inferred to be the result of motivational differences which theoretically are likely to be the outcome of different childhood experiences" (p. 18).

Roe (1956) also identified the substance of four primary child-rearing patterns with the psychoanalytic notion that childhood encompassed the primary experiences shaping adult behavior,

particularly vocational behavior. These child-rearing patterns involving parental behavior are comprised of the overprotective behavior, the overdemanding behavior, the avoiding behavior, and the accepting behavior. Different patterns of child-rearing will result in complete, partial, or delayed gratification for different needs, if they are gratified. Therefore, children who are reared under different patterns will develop different needs hierarchies. An individual will attempt to find a specific type of occupation in order to satisfy his or her need. Classifying occupations by field and level, Roe (1956) noted that the needs hierarchy, shaped by early satisfactions and frustrations, determines the type of occupation chosen, while genetic factors, such as mental ability and manual dexterity, determines the occupational level the individual will choose (Roe & Siegelman, 1964). This finding was compatible with Ivey's (1963) finding that interests determine the direction of the career, but that values affect satisfaction with a given position. In summary, it will be concluded that the knowledge of a child's child-rearing experiences and his or her genetic propensities, interests, and abilities would be relatively accurate in predicting an individual's type and level of occupation, as well as his or her social class.

The relationships between ability, interests, some genetic propensities and vocational behavior have been explored intensively in the literature, but study of the direct relationship between a needs hierarchy and vocational choice has not been fruitful. Nevertheless, the investigation of socioeconomic status in relation to vocational

choice was available in literature. Schwarzweller (1960) conducted a study of senior high school boys and girls to determine what values were related to their occupational choice. The findings from his study generally showed the influence of values in occupational selection. He concluded that occupational value-orientations were essentially learned in the early socialization process and were determined by certain socio-cultural factors. Studies of Centers (1948), MacArthur (1955), Rosenberg (1957), and Wilson (1959) indicated significant differences in attitudes toward work between college students from upper-class and from middle-class homes. Other studies suggested that students of low-income families tended to "overchoose" career goals as a source of achieving the more basic needs of emotional and physical security (Dipboye & Anderson, 1961; Werts, 1966).

In conclusion, the strength of a particular need, the amount of delay between the arousal of the need and its satisfaction, and the contingent values formed by early childhood experiences appear to influence individuals' vocational behaviors or choices and could be used as reliable predictors of socioeconomic status. However, we must be cautious about generalizing the research results concerning the relationship of a needs hierarchy and work values to socioeconomic status, because the relative strengths of these needs and values within the individual at a particluar level of the socioeconomic structure are hard to determine.

On the other hand, Rosenberg's (1957) notion of work values as the result of the encultration process was supported and clarified by

some studies (Inkeles & Smith, 1974; Hedley, 1980; Hofstede, 1980; Triandis, 1982). Research on the effects of industrialization upon modern society has resulted in two competing orientations--the convergence thesis and the cultural diversity perspective. The convergence thesis would suggest that there will be little or no difference in work values among ethnic groups provided that people in the same society have been similarly exposed to the process of industrialization, while advocates of the cultural diversity thesis would maintain that the cultural differentiation of these ethnic groups would be expressed in differences in work values.

In addition to cultural differences in work values, Walker, Tausky, and Oliver (1982) pointed out two central themes of socialization, identified in the literature on work values. One theme stressed that work-related values of people were an outgrowth of preemployment socialization. The match between occupational features and workers' values was viewed as the result of a process of occupational self-selection, in which workers chose jobs consistent with their value frameworks. The second theme focused on the importance of occupational experiences in shaping work values and personalities. This theme underscored occupational socialization by which the job itself was seen as central in molding workers' beliefs and values (Kaufman & Fetters, 1980; Walker, Tausky, & Oliver, 1982). These two views of socialization in regard to work values should be simultaneously considered in developing empirical and theoretical knowledge of work values, according to Mortimer and Lorence (1979). They claimed that an individual's work values, shaped in part by

intensive training and education, quite clearly influence his or her choice of job, but job-related experiences, in turn, also affect workers. These work experiences strengthen some work values and thereby influence workers to reorder or to reconstruct priorities and to reconsider action alternatives.

Theoretically, the needs hierarchy of Maslow (1954), and Roe (1956) and Rosenberg's (1957) proposition of work values as the results of the encultration process, can strengthen our ability to explain and predict an individual's vocational behavior and choice by determining his or her needs hierarchy, childhood experiences, and contingent work values.

Studies of the Stability and Patterns of Work Values

Rokeach (1973) suggested that the concept of value seems likely to occupy a central position in the social sciences, providing a unifying theoretical and empirical network. This central position was in part explained by Katz (1963), who believed that values might be thought of as "characteristic outer expressions and culturally influenced manifestations of need" (p. 16). Katz (1963) further stated that:

> ... the competition among values is likely to be comprehensive--reflecting needs and socio-familial forces, balancing interests and aptitudes, and translating them all into quantities with a common denominator. The acceptance of a role involves primarily the acceptance of values. In other words, although the role of an individual may be composed of and described in terms of many attributes, the individual's values are the mediating force that binds the attributes together, weights them, organizes them, integrates them, and enables them to be activated in an organismic way in decision-making. (p. 17)

The role of work values as a "mediating force" of other

conceptions of vocational behavior has received much attention from diverse disciplines. Borow (1964) noted that, like many other fields which are under vigorous cultivation through research, the field of occupational behavior suffers from bigness and disjointedness. Investigators in diverse scholarly disciplines (e.g., counseling psychology, clinical psychology, industrial psychology, occupational and industrial sociology, labor economics) have built relatively independent conceptions of "occupational man," each conception having its own judgements of what is important, its own methodology, and its own professional argot (p. 371). Research on work values likewise is plagued by the same problems.

Based on the needs hierarchy of Maslow (1954) and Roe (1956), vocational behavior is the manifestation of a needs hierarchy and the gratification of prepotent needs. Delayed needs which eventually obtain satisfaction are those which persist as unconscious motivators leading to certain vocational behavior. In order to support Maslow's (1954) and Roe's (1956) theories, work values were gradually accepted as a reliable means for researchers to predict and explain vocational behavior. Some studies on the taxonomy of work values revealed that work values could be described as the intrinsic-extrinsic dichotomy (Kazanas, 1978) and the trichotomy of intrinsic, extrinsic, and concomitant factors (Ginzberg et al., 1951). Zytowski (1970), after a review of the concept of work values, concluded that three to six values would be adequate for the taxonomy. Similarly, Impellitteri and Kapes (1971) conducted another factor analysis of work values and concluded that the eight values of satisfaction, prestige, salary,

independence, social service, co-workers, leadership, and security were agreed upon by the authors of eight available occupational value inventories, i.e., Super's Work Values Inventory; Weiss's Minnesota Importance Questionnaire; Gribbons & Lohnes's Value Indicators; Dipboye & Anderson's List of Values; Rosenberg's Ideal Job Scale; and Schaffer's Value List.

Regardless of the confusion caused by different types of taxonomies and work value inventories, previous research supported the statement that work values have been found to have a weak, but consistent, relationship with such factors as family, socioeconomic status, sex, age, race, education, socioeconomic background, and occupational aspiration (Zytowski, 1970). The results of these research studies are consistent with Osipow's (1968) assumption that many of the differences found in human vocational behavior are related to certain dissimilarities existing in the culture or socioeconomic structure. The studies which follow are presented with an attempt to identify how work values stabilize and are associated with some biographical factors as well as various vocational behaviors.

Stability of Work Values

A topic of canonical concern related to work value systems is that of their stabilities. Since interests differ from person to person and values relate to a class of objects, it could be inferred that values would be more stable and feasible in the description of personality and vocational behavior than interests. Some studies are available to verify the stability of work values.

Diploye and Anderson (1959) examined value rankings of 1,131 ninth- and twelfth-grade high school students in urban, suburban, and semi-rural areas in central New York. There was a significant difference among groups. Interestingly, work and security were ranked most important by all groups. The authors concluded that values were generally well formed by grade nine and remained constant during the high school years. Similarly, a study of eighth- and eleventh-grade students in a small Appalachian school district by Hales and Fenner (1972) resulted in the conclusion that the development of work values was well underway for most children by the fifth grade and continued with remarkable similarity through eleventh grade. In addition, Thompson (1966) observed no change in students' mean scores on each of Centers's (1949) work value scales between the first and second year of high school.

Two longitudinal studies explored this topic as well. Gribbons and Lohnes (1965) collected data on work values of 111 boys and girls over a period of five years from grades eight through twelve. Among 12 work values, satisfaction and interest consistently ranked first and second over this period. The rankings of work values were fairly stable from eighth through twelfth grade, with a major trend being a shift from idealism to realism. In grade twelve, boys ranked salary and prestige higher than girls did, while the girls gave high rankings to personal contact and social service. Searle's (1962) study of the work values of dropouts, graduates, and students from the Michigan State University revealed that the results tended to reflect either idealized responses or the fact that values are more stable than is

generally recognized. Nevertheless, in the research of Davis (1965), Kapes and Strickler (1975), Rosenberg (1957), and Searle (1962), an inconsistency or a shift of work values was observed. Keeping in mind the concept that career guidance or the forming of work values is a learning process, it is not difficult to accept the explanations that values changed to accommodate subject majors which were originally incongruent (Davis, 1965; Searle, 1962), and that school curricula reinforced a set of work values and challenged other values (Kapes & Strickler, 1975). Rosenberg (1957) recognized the same value change, but maintained that the trend to change majors to be consistent with values was stronger than the value change.

In summary, people tend to select or switch to occupations which are consistent with their value systems. After they select jobs which are congruent with their original work values, their values tend to become more psychologically consistent over time with the norm of their occupational groups. In general, empirical evidence supported the concept that work values are stable and reliable for describing and predicting the vocational behavior of an individual.

Patterns of Work Values

The results of some previous studies which dealt with the relationships among work values and such factors as age, sex, race, and grade level supported the hypothesis that such weak, but consistent, relationships did exist. The following studies are presented with an attempt to describe and verify these relationships.

Age differences. The earliest age differences in work values

can be traced back to a study conducted by Singer and Stefflre (1954a). They used Centers's Job Values and Desires Questionnaire to study the occupational preferences of high school senior boys and to compare them with Centers's sample of adult men. The findings were that the adolescent boys preferred the job values of interesting experience, fame, and profit, while the adult men preferred the job value of independence, supporting the proposition that age difference affects work values. Wagman (1965) used the same instrument to compare age and sex differences in occupational values of University of Illinois sophomore men and women. One of Wagman's findings was that for both sexes, the high school seniors seemed to prefer selecting jobs in which they were assured of job security and where they could be independent, while the university sophomores preferred very interesting jobs. He explained that the emphasis on job security by the high school students was a function of their lower socioeconomic level than the university students. University students, coming from relatively more affluent homes somewhat more free from stringent breadwinning demands, could thus free themselves and consider jobs for intrinsic values, which then facilitated self-actualization processes.

Another study is noteworthy with regard to age difference in work values. Based on a review of more than 185 research studies of age-related differences in work values and behavior, Rhodes (1983) examined the work attitudes of overall job satisfaction; satisfaction with work itself, pay, promotions, co-workers, and supervision; job involvement; internal work motivation; organizational commitment; and

turnover intention. One of the conclusions he made was that consistent age-related differences were found for a number of work attitudes, but conceptual and methodological difficulties precluded identifying causal factors in the relationship between age and work attitudes. His conclusion is instructive for future researchers who pursue the relationship of work values to age.

Sex differences. Singer and Stefflre (1954b) compared the job values and desires of male and female high school seniors. Differences in job values were obtained for five of the ten categories. A desire for jobs offering power, profits, and independence were more often chosen by boys than girls. Significant sex differences were also found by Drummond, McIntire, and Skaggs (1978), who examined sex and job levels as two variates in a study of young adult workers' work values, and Lacy, Bokemeier, and Shepard (1983), who pursued a study of job attributes preferences of men and women. Of these two studies, there existed a strong relationship between sex and job values. Thompson (1966) investigated the occupational values of high school students and found that girls rated social service and self-expression high, whereas the boys placed high value on salary, leadership, and recognition.

Grade level differences. Grade level and age differences in the work values of 116 fifth-, eighth-, and eleventh-grade students were reported by Hales and Fenner (1972), who claimed that eleventh graders valued altruistic jobs and work that permitted self-realization more highly than did fifth or eighth graders. Kapes and Strickler (1975)

found that grade level differences in work value were associated with different curricula. However, Dipboye and Anderson (1959) and Perrone (1973) suggested that there was no relationship between grade level and work values of high school students. Perhaps this conclusion reflected Zytowski's (1970) perception that a weak relationship existed between values and some factors including grade level.

Race differences. Race is another correlate often associated with work values. Wu's (1977) research compared the work values of 244 Caucasian, 106 Spanish-surnamed, and 70 black students and suggested that the work values of interest, satisfaction, advancement, prestige, and personal goals were significantly different among the three ethnic groups. Dillard and Campbell (1981) and Thomas (1974) discovered race difference in work values among students. In reality, race was usually interfaced with culture and class. For example, Godsell (1981) noted that the impact of culture, race, and class on work values might lead to inadequate socialization of minority groups into organizational life and might prevent individuals from achieving power in an organization. However, Wu (1977) warned that although some value differences were found among the ethnic groups, the overall hierarchies of work values in general were similar among those groups. From his viewpoint, it is obvious that race is not always a good correlate of work values.

Work values and some psychological variables. Numerous studies have examined work values with regard to how they were related to a range of psychological variables, including vocational aspiration,

academic achievement, self-concept, motivation, interests, maturity, vocational indecision, career choice, and work satisfaction.

The results of Schwarzweller's (1960) study lent general support to the influence of values in vocational aspiration. For boys, values on creative work, work with people, and service to society were positively related to high-status occupations, while low-status occupations were significantly related to material comfort, hard work, and external conformity. In the case of girls, high-status jobs were positively associated with values on mental work, work with people, and service to society, while a negative relationship was found between low-status occupations and material comfort, security, and familism. Professional, semi-professional, and managerial jobs were considered as high-status jobs and clerical, skilled, semi-skilled, and unskilled jobs were low-status jobs, according to Schwarzweller (1960). In addition, Singer and Stefflre (1954b) found a preference for self-expression in males and for leadership for both sexes in the sample to be related to a high level of vocational aspiration. Preference for independence was associated with a low level of vocational aspiration.

Work values were correlated with academic achievement and curriculum choice. Knapp and Michael (1980) observed a relationship between work values and corresponding academic success among 7,000 high school students. The pattern of obtained correlations between grade scores and those specific values, hypothesized to correspond with occupations reflected in courses, is generally consistent with expectations. Glogowski and Lanning (1976) reported that women in

business classes did place less value on social interaction than did women in education and nursing curricula. Yates (1979) examined the relationship of self-concept, career choice, and grade level to work values of black females enrolled in inner-city vocational schools. Self-concept was found to be correlated with work value orientation. On the contrary, there was no difference for self-concept and work values between disadvantaged and non-disadvantaged eleventh-grade students (McGough, 1978) and between clerical participants in skill centers and those employed in public service (Berry, 1981).

Motivational variables could determine performance by the individual and predict work values. Katzell (1980) reviewed a few motivation studies and suggested that motivating environments and motivational traits seemed to influence job satisfaction and role performance. He further expressed an optimistic view about the success of the motivational programs in improving workers' attitudes and work performance. Another study conducted by Eyde (1960) has been concerned with the importance of work values in determining motivation for work. In the study, alumnae with high work motivation assigned themselves rather masculine work values of interest, variety, mastery, and achievement, while the alumnae with a low level of work motivation chose feminine values of independence and social service.

Kinnane and Suziedelis (1962) examined the relationship between interests and work values and stated that the results of their study supported the notion that the individual's patterning of inventoried interests closely reflected his or her ways of valuing work, and that different work-value orientations were predictive of distinctive

interest patterning as represented by the groupings of occupations on the Strong Vocational Interest Blank. On the contrary, Ivey (1963) suggested that interests determined the direction of the career, but that work values affect satisfaction with a given position.

Career maturity and vocational indecision were examined by some researchers in relation to work values. Daly's (1983) study focused on the relationship of differentiation of work values to maturity of career attitudes and other factors. He analyzed the data collected from 1,349 fifth- to ninth-grade boys and girls from three schools in the state of New York in Suffolk County, Long Island, and New York City, and found that there existed such a relationship. Contrarily, Super and Overstreet's (1960) study revealed no relationship between career maturity and work values of ninth graders. The relationship between vocational indecision and work values was examined by Greenhaus and Simon (1977). The sample included 153 freshman and sophomore college students. One of the major findings was that students who were vocationally undecided tended to place less importance on intrinsic work values than did students who were committed to an occupation. Work values and career salience were two primary determinants of vocational indecision.

Some researchers addressed the role of work values in the process of career choice. In the studies of Astin (1958), Davis (1965), Eyde (1960), Gray (1963), Jurgensen (1947), Miller (1956), Rosenberg (1957), Sampson and Loesch (1981), Simpson and Simpson (1960), and Zedeck, Middlestadt, and Hayes (1981), most of the researchers utilized various work-value inventories and found that persons

planning to enter different occupations or women planning to work or marry had differing work values preeminent. For example, Zedeck et al. (1981) discovered that Police Science students differed significantly both from other students not planning police work and from active police officers. Another study indicated that job knowledge which is important to career choice was not related to work values (Sampson & Loesch, 1981).

The concept that job satisfaction is a corollary of need or value satisfaction, or that job satisfaction can be predicted by the degree to which the person's occupation satisfies his or her needs, has been supported by Blai (1964), Chant (1932), Centers (1948), Ginsberg , Ginzberg, Axelrad, and Herma (1951), Herzberg, Mausner, and Snyderman (1959), Kazanas (1978), and Smith (1977). For example, Kazanas (1978) studied the relationships of job satisfaction and job productivity to work values of a randomly selected sample of beginning workers who graduated from public vocational education programs. In the study, workers with intrinsic work value orientation seemed to be more satisfied with their jobs and were more productive than were those with extrinsic work value orientation. Specifically, some studies dealt with the relationship between work values and the job satisfaction of black workers. It was found that black workers were inclined to view work more extrinsically than intrinsically, and more toward their lower-order security needs than toward their higher-order needs for self-fulfillment and self-actualization (Lefton, 1968; Lerner, 1972; Quinn, Staines, & McCullough, 1975; Shlensky, 1972; Smith, 1975; Terkel, 1974). Factors related to work context

contributed to dissatisfaction. This idea was supported by Strauss's (1975) study. However, a study of the effects of congruency between work values and perceived job attributes upon job satisfaction of pharmacists showed that work values were weak predictors of job satisfaction (O'Brien & Humphrys, 1982).

Work values and social influences. A number of studies sought to explore the relationship between work values and such factors as social class or socioeconomic status, culture, family, and parental influences. Whereas early psychologists attempted to identify a universal pattern of work values, attitudes, and motivations, most of today's researchers are concluding that each worker's needs and wants are not only different, but are constantly changing over time (O'Toole, 1982). Social, cultural, and parental influences in general cause such need and want changes, as well as changes in work values. Centers's (1949) study of the effect of social status on adult men's work values revealed that self-expression was a middle-class job value, while security was a working-class value. Singer and Stefflre (1954a) replicated Centers's (1949) study with high school senior boys as the sample and concluded that the adolescent with a high level of vocational aspiration identified himself with the middle class and hence viewed job values in the manner of adult middle-class members while the adolescent with a low level of vocational aspiration might identify himself with the working class members (Singer & Stefflre, 1954a, p. 422). Class and cultural differences were also reported by Godsell (1981), who found that such differences could prevent the

individual in an organization from becoming socialized and achieving a high status. From another viewpoint, Hedley (1980) found that the cultural differentiation of the different ethnic groups would be expressed in differences in work values, in a study which tested the convergence and cultural diversity theses.

Super (1957) noted that the family is frequently thought of as determining the careers of its members through its economic interests, affiliations, and values. Kinnane and Pable (1962) examined the family background and work values of 121 eleventh-grade white males from two high schools and found that the hypothesis that family influences were critical in the development of work values was supported. Furthermore, one of the major family influences is the process of the son's socialization and occupational attainment, which is dependent upon the character of the father's occupation (Mortimer, 1982). Specifically, parental support was more strongly related to the son's extrinsic values in the business sector and to the sons' intrinsic and people-oriented value orientations in the professional origin group.

Wijting, Arnold, and Conrad (1978) studied generational differences in work values between parents and children in sixth, ninth, tenth, and eleventh grades. Results confirmed that at earlier ages there was greater similarity in values between children and their like-sexed parent, but older boys and girls were most similar to their fathers. Moreover, Mietus (1979) analyzed the data collected from 1,489 students of two comprehensive schools in a study of the work value differences among groups of students categorized on the basis of

parental occupations. Eight categories of parental occupations included professional, managerial, skilled, unskilled, self-employed, unemployed, retired, and unknown. The results of the study indicated that the groups of students from homes where a parent was retired scored significantly higher means on work values than groups of students whose parents were unskilled, unemployed or whose occupation was unknown. Significant value differences were also found for the group of students whose parental occupations were professional or managerial or skilled compared to the rest of groups of students. Finally, Glee (1976) found no differences between college students' value of prestige and that of their parents.

Work values and work experience. Kalleberg (1977) described the following social factors that influence work values: (a) socialization and other types of life experiences which occur prior to the individual's entry into the labor force, (b) nonwork social roles which impose constraints and contingencies on the types of meaning that the individual can seek from the work activity, and (c) work experiences which affect the mature workers' valuation of the potential rewards associated with work (p. 141). Empirical studies have frequently demonstrated changes in work values as a result of work experiences. Helliwell (1981) examined the meaning and value of work of 121 senior cooperative vocational and 139 senior noncooperative academic students at Bayonne High School in New Jersey. The results showed that the senior cooperative vocational students at the school for the school year 1978-1979 exhibited a broader

understanding of the meaning of work, a more intrinsic value of work, and overall more positive work attitudes as compared to the senior noncooperative academic students.

The same positive results were observed by Schreiner (1979), who tried to ascertain the differences in personal and social adjustment and work values of cooperative trade and industry students, as compared to the working and nonworking students not enrolled in the cooperative trade and industry program. The results with regard to work values showed that cooperative trade and industry students had a higher desire for achievement than the two noncooperative education groups, and a desire for better supervisory relations than the noncooperative student worker group. In addition, cooperative trade and industry students and noncooperative education student workers had higher creativity and intellectual stimulation work values than the noncooperative education student nonworkers. At the same time, Young (1979) studied the effects of school supervised work experience on work values of 204 high school students. The findings of the study indicated that, generally, work experiences had positive effects on the creativity and independence work value scores of the students, but the program had differential effects on the work value scores of the male and female students. The program had moderate to positive effects on the creativity, intellectual, stimulation, and independence work value scores of the males and negative effects on the creativity, intellectual, stimulation, independence, and management work-value scores of the females.

Work values and work environments. A number of studies have explored the effects of work environments on work values. Pennings (1970) discussed promotion rates of an organization as a determinant for work value sytems, using 314 subjects from 12 organizations. The results of the study indicated that low-level white-collar workers in the high promotion rate organizations would tend to have an intrinsic work-value system, since high promotion rates involved anticipatory socialization. From a different angle, Weiss (1978) examined the relationship of superior and subordinate characteristics to value similarity. Results showed that superior consideration was positively correlated with value similarity for the total sample of 141 pairs of subordinates and their superiors. Superiors' success and competence were positively correlated with similarity only for pairs with low-self-esteem subordinates. Weiss's (1978) results were consistent with Bandura's (1971) finding that learning often occurred through imitation and modeling.

In addition, three other studies which dealt with the effect of work environments on work values are noteworthy. Blood (1969) evaluated the Protestant Ethic of two groups of airmen, both students and individuals in permanent assignments, and yielded results suggesting that adherence to the Protestant Ethic idea was positively related to job satisfaction, while agreement with nonProtestant Ethic ideas was inversely related to job satisfaction. Aldag and Brief (1975) replicated Blood's (1969) study with a different sample and different measures of affective responses. Significant relationships were found between work values and employees' perceptions of task

characteristics and of leader behaviors. Their study supported the idea that adherence to Protestant Ethic ideals should be associated with strong higher order needs. Finally, Wood (1981) conducted a study of the relationship between work values and the perception of the work setting. Based on the data collected from 52 satisfied factory employees, the study supported the interactionist hypothesis that value-perception correlations were significant when satisfaction was present.

Work values and occupations. Workers in diverse occupations possess different personalities and work values. Some studies verified this fact. Gray (1963) examined the need and value differences in three occupations. Subjects selected consisted of 50 secondary teachers, 50 accountants, and 50 mechanical engineers. The findings of the study supported the proposition that substantive need and value differences existed between people engaged in different occupations. This result is consistent with Zytowski's (1970) statement that persons who are in or who are anticipating entry into a given occupation appeared to have value hierarchies more similar to those entering diverse occupations (pp. 183-184). Kaplan and Tausky (1974) reported the result of a study of the work values of 275 hard-core unemployed people. The findings indicated that the economic dominant factors affected their value systems, regardless of the differences in sex, age, educational level, or ethnic backgrounds.

Pennings (1970) examined the work value system of white-collar workers. In the study, random samples of 45 low-level white-collar

workers were drawn from the three small companies and 269 from large ones, totaling 314 subjects. The findings showed that the importance attributed to intinsic work aspects varied with promotion rates and that white-collar workers in low-promotion environments held both intrinsic and extrinsic values, while white-collar workers in high promotion environments were more intrinsic-value oriented. Work values of young female workers in Maine were discussed by Drummond, Skaggs, and Ryan (1976). They found that the sample tended to be concerned about extrinsic values in their careers, while the high school girls, used to norm the Super's Work Value Inventory, were more concerned about intrinsic values. Bennett (1974) studied the work values of trade and technical teachers and compared their values with those of academic secondary teachers. The studied data revealed that secondary trade and technical teachers were more concerned with prestige or status achieved through success than were academic teachers. In addition, value systems of white-collar workers usually were intrinsically oriented, whereas blue-collar workers attributed a greater importance to extrinsic values (Friedlander, 1965; Seeman, 1967; Turner & Lawrence, 1965).

Variations in work values within a given occupation are also noticeable in addition to the work value differences among diverse occupations. Pelz and Andrews's (1976) findings supported the idea that scientists' orientation toward work was related to their attributes and behaviors. They found that scientists with strong local orientation toward their work, and orientation which emphasized an organization as the major focus, would have positive attitudes

toward extrinsic work values, whereas scientists with strong cosmopolitan orientation, an orientation which emphasized the profession as the major focus, would stress intrinsic work values. Similarly, Neumann and Neumann (1982) followed that approach to study the relationship between the work value orientation of college professors and their attitudes toward work. The major findings of the study were that (a) global work orientation was a strong predictor of attitudes toward intrinsic work value in social sciences and was a moderate predictor in the physical sciences, (b) specific work orientation was a strong predictor of attitudes toward extrinsic work values in the physical sciences and was a moderate predictor in the social sciences, (c) global work orientation was not related to extrinsic work attitudes in the physical and social sciences, and (d) specific work orientation was not related to intrinsic work values in the physical and social sciences. The same orientation approach was applied to managers by Neumann (1980), who verified the congruence between extrinsic work values and specific work orientation on the one hand, and between intrinsic work values and global orientation on the other hand. In addition, Singh (1978) studied the work-value differences between quickly and slowly progressing farmers in India. Results showed that high scores on the test of one's attitude toward earning, performance for activity, pride in work, upward striving, cautious decision making, and lack of interest in maintaining personal relations were positively associated with progressive farm behavior.

Work values and background characteristics. Research on the

relationships among work values and a number of background characteristics, including student characteristics, has been conducted mostly for workers and students at different levels. For example, Andrisani and Miljus (1977) examined individual differences in preferences for intrinsic versus extrinsic aspects of work in the Ohio State University National Longitudinal Survey of 5,000 men aged 14 to 24 years and 5,000 men aged 45 to 59 years when first interviewed in 1966. Findings suggested that preferences are significantly related to age, occupation, class of worker, job satisfaction, educational attainment, and race. Very little consistent evidence of preference differences was found between white- and blue-collar workers or between rural and urban workers, and among individuals with different levels of income. Specifically, the following studies investigated the relationship between work values and a number of student characteristics.

Two studies dealt with the work values of elementary school students. Corine (1978) attempted to determine the effect of a student's grade level, sex, socioeconomic status, race, achievement level, and amount of career education on the perceived rewards for working. A total of 1,667 students from kindergarten through sixth grade enrolled in schools throughout Illinois State were selected for the study. The rewards for working consisted of money, use for money, service to others, and personal satisfaction. Significant relationships were found to exist between the reward for work and the characteristics of sex, grade level, and reading achievement. No significant relationships were found between the reward for work and

the characteristics of race, socioeconomic status, mathematical achievement level, and amount of career education. On the other hand, Weaver (1983) utilized the Ohio Work Value Inventory to measure the work values of students from kindergarten through sixth garde. The 11 work values were altruism, object orientation, security, control, self-realization, independence, money, task satisfaction, solitude, idea/data, and prestige. The independent variables included gender, grade level, reading achievement, and occupation of father and mother. No significant relationship was found between gender and work values. The work values of security, self-realization, independence, task satisfaction, and solitude were found to be significantly related to grade level. Parental occupations were not related to work values. Interestingly enough, Corine's (1978) findings were mostly contradictory to Weaver's (1983). This contradiction may result from different sampling procedures and the uncontrolled factors involved in conducting these two researches.

At the secondary level, Thomas (1974) examined the effects of social position, race, and sex on work values of 240 ninth-grade students. In general, sex and race were found to be significantly associated with work values. For college students, Leverson (1977), in a study of 681 basic nursing students, concluded that three background characteristics, marital status, father's occupational level, and objectively estimated socioeconomic status failed to predict the student's work values and that class, age, ethnicity, religion, and the father's education predicted the student's work values well.

In summary, the concept of work values as a mediating force is a viable one in the description of vocational behavior. Weak but consistent relationships have been found between work values and such factors as sex, age, socioeconomic status, work experience, occupational aspiration, and vocational area. The control of the undesirable variables, reliable instruments, appropriate sampling plans, and data analysis methods are crucial to the improvement of the reliability and validity of empirical work. The study of work values is not an exception.

Work Values of Post-Secondary Vocational Students

Work values of vocational students in the community college have been examined by some researchers. A study of 330 associate-degree-seeking students by Goss (1978) revealed that way of life, achievement, surroundings, economic returns, and security were important to the community college students seeking the Associate of Applied Science degree, and that economic returns and way of life were important to the business students seeking the Associate of Arts degree. Also, way of life, achievement, supervisory relations, security, surroundings, altruism, and associate values differentiated between these two groups of business students.

Faulkner, Garbin, and Wimberley (1976) conducted a study of the relationship between the socioeconomic status and prestige of 5,170 vocational students in 60 junior colleges throughout the United States. Their hypothesis that students from lower social class backgrounds award greater prestige ratings to vocational occupations

than do students with a higher socioeconomic status was finally supported.

Miller (1974) found a negative relationship between extrinsic work values and vocational maturity among both female and male community college students, but none of the intrinsic work values were positively associated with vocational maturity for males and only two of the five intrinsic work value scales were associated for the females. Based on Miller's (1974) findings and the findings by Pucel, Nelson, Heitzman, and Wheeler (1972) and Wall and Gulkus (1974) that positive relationships existed between work values and vocational maturity with adult populations. Gade and Peterson (1977) studied the same topic. They hypothesized that intrinsic work values will generally be related to vocational maturity for women but not for men, while extrinsic work values will generally be unrelated to the vocational maturity of both groups of community college students. The sample consisted of 48 male and 31 female students enrolled full time in the Spring of 1975 in programs at a state-supported vocational technical institute in the upper Midwest. The two hypotheses were supported.

Grace (1974) examined the work values of community college freshmen students. He found that there were significant differences between different groups studying various occupations, as judged by their performance on certain scales of the Work Value Inventory, prior to their entrance into an occupational group. Sex differences were also significant. Altruism was stressed by the females, while economic returns were preferred by the males. In addition, work value

scores were a moderate predictor for Liberal Arts, Secretarial, and Business Administration students. From another point of view, Greenhaus and Simon (1977) reported that community college students who were vocationally undecided tended to place less importance on intrinsic work values than did students who were committed to an occupation.

A number of correlates were found to be associated with the work values of community college students. Glogowski and Lanning (1976) reported that both curriculum and age were related to work values in a study of 60 community college women. On the other hand, work values were verified as a good predictor of reading achievement, according to Drummond, Pinette, and Smith (1977), who conducted a study examining the effect of self-concept and work values on reading achievement. In the study, data were collected from 95 community college students. Finally, Taylor (1976) further analyzed the relationship between work values and personality/occupational typologies of community college students. The results of discriminant analysis showed that all personality/occupational types were strongly related to some of the work values.

Although research studies on the work values of the vocational students in community colleges have not been very fruitful, previous literature at least provides us some insights into a number of relationships among work values and such variables as sex, age, and curriculum. In comparison with the flourishing development of the work-value concept in areas other than community colleges, it is promising that considerably more empirical research on work values of

community college students could be established to complement the constructs already existing.

Literature Related to Post-Secondary Vocational Student Characteristics

The surge of occupational education in the community college signals a new direction for the community college movement. According to statistics from the National Center for Education Statistics (1982), enrollments have increased from 4,042,000 in 1977 to approximately five million in 1982 (p. 44). The factors which have caused these dramatically increasing enrollments in vocational education have been: (a) the needs of many high school students who did not want an academic education but did want to learn a technical skill or trade, (b) the need to retrain people who changed jobs in mid-career or who re-entered the competitive job market, and (c) a great concern at the state level for regulation and licensing of public and private schools and institutions (Davenport, 1981; Lombardi, 1978).

In view of the fact that post-secondary vocational institutions were undergoing a number of philosophical changes, including recognition of the need to address social problems and in approaches to individual educational needs, the student body in the community college expanded to accommodate a variety of students with diverse backgrounds. Basically, community college students consisted of high-school graduates, not bound for the four-year college; high-school dropouts; the non-English speaking immigrants; the unemployed; the

malcontent at an underemployed level; the handicapped; women; and the returning veterans (Buzzell & Hollander, 1974). This phenomenon reflects the egalitarian objective of community college education.

Richardson (1981) commented that the community college has been described as nontheoretical and as opposed to the conduct of research. Nevertheless, another researcher revealed that students were the most popular research interest (Platt, 1975). One of the student-related research focuses is on the study of student characteristics.

Many studies have dealt with the topic of the characteristics of post-secondary vocational students and have pointed out a number of the salient characteristics. It was found that 42% of vocational students were employed full time and another 21% part time. The father's occupation and parent's educational level were found to be closely related to the student's chosen program. In general, most of the students were from the middle and lower social classes. Strength in the intended major was an important basis for the selection of schools. The aspirations for a vocational program and for a bachelor's degree were stressed by students. However, the academic achievement of those students was slightly below the all-university group average. Also, annual family income of the vocational students was found to be lower than the average reported for all community college students (Gillie, 1970).

Winstead (1980) examined some selected characteristics of post-secondary vocational-technical students in South Carolina. Based on the findings of the study, the student tended to be male rather than female; a large number of students were 24 years old and older; a

large percentage of students were represented in the low to middle socioeconomic class; and the low socioeconomic level of students tended to pursue the areas of business and the trades and crafts. The factors influencing a student's attendance were the college's assistance in the pursuit of work, the offering of special educational programs and financial aid, and low tuition fees. In addition, Holt (1979) predicted that tomorrow's community college students would be older, and more task- and job-oriented. He also pointed out that there would be fewer full-time students and more women and minorities. Bartel (1978) studied the characteristic differences and similarities of part-time persisters and part-time nonpersisters. He found that for part-time nonpersisters, 42% were distributed in the 21 to 30 age bracket, while over 50% of the part-time persisters were distributed in the 31 to 40 age bracket. The study also indicated that 68.2% of the persisters were male, while 72.0% of the nonpersisters were female. Finally, only 4.5% of the persisters were single, while 33.2% Of the nonpersisters were single.

Recently, Knoell (1982) conducted a statewide longitudinal study of California community college students. The results of the study showed that for vocational students, the male to female ratio was 41 to 59 and that the mean age was 27. Other findings were that 70% of these students were white, that they had completed high school, and that 44% of them had work experience.

Based on the above findings and the previous discussion, it is reasonable to conclude that vocational students in the community college might possess the following characteristics:

1. They are job-oriented.

2. Their mean age ranges from 20 to 30.

3. Most of the students are from middle or lower classes.

4. Many students have had full-time or part-time work experiences.

5. Most of the students have earned high school diplomas.

6. Their fathers' occupations and parents' educational levels have influenced the students' choice of programs.

Summary

Vocational education in the community college has started in a new direction for the community college movement since the last decade. The trend is evidenced by dramatically increasing enrollments in vocational education programs. Three factors contributing to this trend consist of (a) the needs of many high school students who want to learn a technical skill or trade, (b) the need to retrain mid-career seekers, and (c) a great concern at the state level for regulation and licensing of schools and institutions.

In the community college, student services related to career guidance and career placement can be greatly enhanced by examining the relationships among community college student characteristics and their work values. Because the world of work is constantly changing at an unprecedented pace, the answer to the question, "What do you really want from a job?", becomes an important clue to reveal people's work values.

Many researchers believe that the foundation for an effective

occupational choice should be in work values and goals of an individual because these values enable the individual to order current activities with reference to the future. More specifically, work values are important for both a client in vocational counseling and an applicant for a position in business or industry in clarifying goals and determining the psychological appropriateness of a given type of education, training, or employment. A vocational student of the community college can be both a client in vocational counseling in school and an applicant for a position in business or industry at the same time. In short, the concept of work values can be employed to explain job satisfaction and predict occupational entry of an individual.

Historically, the meaning and value of work has changed since early civilization. In the early Greek concepts, the object of work was leisure, and work was a curse or a symbol of punishment from God. Later, work became activities in which many took pride and enjoyment and a rightful duty for all. This was the beginning of the work ethic. Work was seen to possess personal and financial rewards for the workers. The concept of the work ethic expanded when people began to expect self-fulfillment and an improved quality of life from work in addition to financial security. As a result of these new work expectations, new work values emerged.

Theoretically, the need hierarchy of Maslow (1954) and Roe (1956), and Rosenberg's (1957) proposition, explained the genesis and the utility of the work-value system. Work values were considered as the results of the encultration process or the need gratification. On

the other hand, the study of work values can greatly strengthen our ability to explain and predict an individual's vocational behavior and choice by determining his or her needs hierarchy, childhood experiences, and contingent work values.

Investigators in diverse scholarly disciplines have built relatively different conceptions of "vocational man," each with its own judgements of what is important, its own methodology, and its own professional argot. In spite of these disparate judgements, factors such as satisfaction, prestige, salary, independence, social service, co-workers, leadership, and security have been agreed upon by most of the contemporary authors of work-value inventories.

The results of several longitudinal studies show that students' work values are generally stable in the elementary and secondary schools. People tend to select or switch to those occupations which are consistent with their original work values. After they select jobs, their values tend to become more psychologically consistent with the norm of their occupational groups.

Research has also shown that consistent relationships exist among work values and the factors of sex, age, grade level, race, work experience, work environment, participation in cooperative education programs, occupational aspiration, and vocational area. Work values have relatively stronger relationships with age, sex, race, grade level, work experience, participation in cooperative education programs, occupational aspiration, and vocational area. On the other hand, it has been found that relatively weaker relationships exist between work values and the factors of grade level and work

environment.

Work values are positively associated with some psychological variables, including academic achievement, self-concept, motivation, interests, maturity, vocational indecision, career choice, and work satisfaction. Research supports the idea that interests determine the direction of the career, but that work values affect satisfaction with a given position. In addition, it has become a practical exercise recently to include work values in the process of career choice.

Studies related to the work values of post-secondary vocational students are often limited to the relationships between work values and such factors as sex, age, vocational major, vocational maturity, curriculum, and self-concept individually. To date, there has been no systematic study which has involved a set of community college student characteristics and their work values.

Research studies relating demographic variables to work values, although not directly relating community college student characteristics to their work values, provide an empirical background for the conduct of this study. Similarly, general theories related to work values serve as the framework for the design of this research.

CHAPTER III

PROCEDURES

In order to describe the procedures of this study in sufficient detail, this chapter focused on the following topics:

1. Population and Sample
2. Instrumentation
3. Variables
4. Analysis

Population and Sample

Several types of post-secondary vocational education programs have existed in Pennsylvania. Among those institutions are state-related colleges, public community colleges, private junior colleges, and proprietary business and technical schools. The sample of subjects in this study was selected randomly from two public community colleges which are located in the central Pennsylvania region. These colleges, Harrisburg Area Community College and Williamsport Area Community College, are the only two public community colleges in the area, according to the Pennsylvania Education Directory (1983, pp. 143-144).

Enrollment at Harrisburg Area Community College in Fall Semester 1984 was 4,047 students (Harrisburg Area Community College, 1984). In Fall Semester 1981, Williamsport Area Community College had an enrollment of approximately 4,000 students (Williamsport Area Community College, 1984). Therefore, a total of approximately 8,047

community college students formed the target population.

As a rule of thumb, at least 10 subjects are needed for each variable when using regression models. Accordingly, this research required no less than 130 subjects with useable data from each community college. A total of 687 subjects were selected for this study; 310 subjects were drawn from Harrisburg Area Community College and 377 from Williamsport Area Community College. The stratified random sampling procedure was used to provide the best assurance that a representative sample of the population was being selected. The strata represented five categories from which equal numbers of subjects were drawn: (a) industrial technologies, (b) agricultural technologies, (c) business technologies, (d) health technologies, and (e) miscellaneous technologies. Table 1 displays the numbers of male and female students in each vocational category, who participated in this study.

The questionnaires were administered to students in classrooms by the vocational teachers who agreed to participate in the research. Before the administration of the questionnaires, participants were informed of the purpose of the study by their teachers; their participation was voluntary.

Instrumentation

The research instrument used in this study was composed of two parts (see Appendix A). Part I consisted of 10 items asking for demographic information about the students. Each item corresponds to one demographic variable, except socioeconomic status which has two

Table 1

Frequency Distribution of Sample by Different Vocational Areas

Area	Harrisburg Area Community College		Williamsport Area Community College		Total
	Male	Female	Male	Female	
Industrial Technologies					117
Industrial Drafting			13	1	14
Electronics Technology	41	2	19		62
Engineering Technology	1				1
Machinist, General			16		16
Machine Tool			11		11
Tool Design			4		4
Electro-Mechanical Technology	9				9
Agricultural Technologies					137
Chef Training	10	3			13
Agribusiness			5	2	7
Food Service & Management	15	15			30
Forestry Technology			12	2	14
Floriculture			5	15	20
Wood Products Technology			8		8
Service & Operation of Heavy Equipment			25	1	26
Nursery Management			13	6	19
Business Technologies					176
Accounting, General	4	6	5	18	33
Banking		1			1
Retail Management				2	2
Business Management	26	32	6	5	69
Computer Science			28	22	50
Data Processing	7	7			14
Word Processing				7	7
Health Technologies					140
Respiratory Therapy	1	5			6
Dietetic Technology	1	11		1	13
Dental Hygiene				15	15
Nursing, R.N.	6	57			63
Practical Nursing				17	17
Radiologic Technology			8	12	20
Food & Hospitality Management				6	6
Miscellaneous Technologies					116
Transportation			65	1	66
Correction Science	4	6			10
Legal Secretarial Science		19			19
Police Science	12	9			21
Missing Data				1	1
Total	137	173	243	134	687

items. The variables are (a) race, (b) sex, (c) age, (d) work experience, (e) participation in cooperative education programs, (f) occupational aspiration, (g) vocational area, (h) socioeconomic status, and (i) reason for entering community college.

Part II of the instrument was the Maryland Work Value Inventory (MWVI) designed by Mietus (1977). It has the advantage of questioning participants' underlying reasons for attitudes toward work, thereby eliciting information which cannot be easily obtained from other instruments (Mietus, 1979). The MWVI was originally developed for a project which was partially supported by federal funds through the Maryland State Department of Vocational/Technical Education. The instrument was developed by using concepts derived from previous literature and research concerning work values (Kazanas, Hannah, & Gregor, 1975; Super, 1962).

The instrument consists of eight work value scales listed below:

1. Personal Satisfaction - the relative extent to which people value work which provides a feeling of satisfaction.
2. Economic - the relative extent to which people value the economic benefits received from the production of goods or providing services.
3. Altruism-social - the relative extent to which people work unselfishly toward serving society.
4. Altruism-employer - the relative extent to which people concern themselves unselfishly toward the benefits of their employers or organizations.

5. Altruism - the relative extent to which people concern themselves unselfishly toward the welfare of society and their employers.
6. Skilled Development and Utilization - the relative extent to which people value work that enables them to gain an increased understanding and development of skills.
7. Status - the relative extent to which people value work that can provide an opportunity to enhance their image, prestige, and social positions.
8. Avoidance - the relative extent to which people value work to avoid the unpleasant consequences of not working. (Mietus, 1979, pp. 57-58)

These eight work values were examined by factor analyzing MWVI items in order to yield a more reasonable structure of the MWVI. For this research, a new factor analysis was conducted again by the researcher to obtain a number of reference variables which may well represent the true elements of work values for the measures of community college student work values.

The tests for the reliability and validity of the instrument were conducted by Mietus (1977) with 45 secondary vocational seniors. To test reliability, those seniors were pre- and post-tested. All the test-retest correlation coefficients for each work value sub-scales were statistically different from zero at the .05 level. Therefore, the reliability of this instrument was assured. Further, the intercorrelations of sub-scales indicated that except for

Altruism-social and Altruism-employer, all the remaining sub-scales tended to be reliably evaluating different work values. Three English teachers, two psychologists, one English supervisor, and two industrial arts professors cooperated in the screening process of the original 75 items. The language and construct content of each item were scrutinized. Finally, a total of 48 items were included in the instrument (Mietus, 1979). This study ultilized the 48-item instrument for yielding a new set of work values. The score for each work value category is the summation of the responses to the items assigned to the category.

The instrument used in this study is available from the author of the instrument, Dr. Walter S. Mietus, Department of Industrial Education, University of Maryland, College Park, Maryland.

Variables

Multiple regression analysis is the major statistical method used in this study to investigate a number of student charateristics simultaneously because almost always more than one key characteristic influences the work values of community college students. Therefore, two kinds of variables were examined: criterion variables and variates.

Criterion Variables

Using all the 48 items as the original variables, the researcher conducted a principal-factor analysis. As a result of this analysis, a smaller number of linear combinations of the original variables were

found which accounted for most of the variance. The score for each new work value category was the summation of the responses to the items assigned to the category. These scores were used as the measures of the criterion variables in this research. Also responses to the items ranged from 1 (strongly disagree) to 5 (strongly agree). The discussions on how to obtain new work value categories will be presented in Chapter IV.

Variates

From the previously reviewed literature, it can be concluded that work values were affected by various factors. Among those factors, nine variates were selected by the researcher. These variates include (a) sex, (b) race, (c) age, (d) work experience, (e) participation in cooperative education programs, (f) occupational aspiration, (g) vocational area, (h) socioeconomic status, and (i) reason for entering community college. The reasons for selecting these variates are given in the following discussion individually.

Sex. This variate was considered as an indicator variable (male=1, female=0). It has been included in almost every work value study as an important factor in affecting work values. A desire for jobs offering power, profits, and independence was more often expressed by high school boys than girls, according to Singer and Stefflre (1954b). Other studies indicated that female workers appeared to be more concerned about extrinsic than intrinsic values in their career choice, and that more significant differences existed for intrinsic than extrinsic factors by satisfaction levels of male

workers (Drummond, McIntire, & Skaggs, 1977; Drummond, Skaggs, & Ryan, 1976). Thompson (1966) reported that girls rated social service and self-expression high, whereas boys placed high value on salary, leadership, and recognition. From the above literature relating sex to work values, the importance of sex as a predictor of work values has been established.

Race. Race was coded as an indicator variable (white=1, otherwise=0). It is another correlate often associated with work values. A study conducted by Dillard and Campbell (1981) showed that the levels of work values among both Puerto Rican and black women and men were more similar than the levels of work values among white men and women. The study further revealed that the race differences in work values were related to situational determinants. Race is usually interfaced with culture and class. The findings of Godsell's (1981) study indicated that the impact of culture, race, and class on work values might lead to inadequate socialization of minority groups into organizational life. Thus, the impact might prevent individuals from gaining power in an organization and achieving higher social status. Different ethnic groups also showed some work value differences, according to Wu (1977). No matter what the functioning forces are in mediating race to be an important consideration in relation to work values, race seems to be a reliable predictive variate in this study.

Age. This variate was treated as a continuous variable in terms of chronological years. Age was often used as an influential factor in the studies related to work values. Singer and Stefflre (1954a)

noted that adolescent boys preferred the job values of interesting experience, fame, and profits, while adult men differed from adolescent boys in preferring the job value of independence. Wagman's (1965) findings revealed age differences in work values as well. He stated that for both sexes, high school seniors seemed to prefer job security and independence, while university sophomores preferred interesting jobs. Although the causal factors in the relationship between age and work values have not been identified by previous research, age is obviously an important factor to be considered in this study.

Work experience. This variate was used as a continuous variable in terms of years of paid work. As stated by Kalleberg (1977), work experience could affect the mature workers' valuation of the potential rewards associated with work. Empirical evidence supports his point of view. Young (1979) reported that, generally, students who participated in school supervised work experience programs had positive work values. In addition, the programs had positive effects on the creativity and independence work value scores of the students, and a significant effect on the achievement work value scores of the students. Work experience enables students to explore their knowledge of the world of work and thereby students can have positive attitudes toward work. For the above reasons, work experience was selected as one of the variates in this study.

Participation in cooperative education programs. This means that students either had participated in such programs or were

participating in the programs at the time of survey. This variate served as an indicator variable (cooperative student=1, otherwise=0). Participation in cooperative education programs is one way to obtain work experience. The work done by cooperative students should be directly related to their vocational majors. One of the conclusions in a study conducted by Helliwell (1981) was that the senior cooperative-vocational students exhibited a broader understanding of positive work attitudes as compared to the senior noncooperative students. Similarly, Schreiner (1979) noted that cooperative trade and industry students had a higher desire for achievement than the two noncooperative education groups, and a desire for better supervisory relations than the noncooperative student worker group. Furthermore, high creativity and intellectual stimulation work values were also associated with participation in cooperative education programs. It seems obvious that this variate has tremendous impact on cooperative students' work values.

Occupational aspiration. This variate was considered as a continuous variable, according to Duncan's Socioeconomic Index (see Appendix B). The measures in the index were obtained for occupations youths are aspiring to achieve. Occupations with high prestige would have high scores. Possible scores range from -4 to 93.

The influence of work values in occupational aspiration was reported by Schwarzweller (1960). In his study of boys, values on creative work, work with people, and service to society were positively related to high status occupations. On the other hand,

low-status occupations were significantly related to material comfort, hard work, and external conformity. In the case of girls, high-status jobs were positively associated with values on mental work, work with people, and service to society, and low-status jobs were related to material comfort, security, and familism. The findings confirm the statement that occupational aspiration is an important predictor of work values.

Vocational area. For comparison of different vocational majors, the number of vocational areas was reduced to five. These five areas included (a) industrial technologies, (b) agricultural technologies, (c) business technologies, (d) health technologies, and (e) miscellaneous technologies. A specific classification of the vocational areas was provided by the Technical Education Yearbook (1980, see Appendix C). Dummy variables were applied to this variable in Question Number Five, using the category of "industrial technologies" as the basic comparison group. For the rest of the research questions, vocational areas were divided into two groups (industrial technologies=1, otherwise=0).

The specific work values generally correspond with occupations reflected in courses. Research indicated that vocational major had an effect on influencing work values (Glogowski & Lanning, 1976; Knapp & Michael, 1980). For example, Glogowski and Lanning (1976) stated that women with business majors placed less value on social interaction than did women in education and nursing curricula. This value difference associated with subject major provides sufficient evidence

of the effect of vocational major on work values. Therefore, vocational major was used as a variate in this study.

Socioeconomic status (SES). This variate was considered as a continuous variable. The range of scores on the continuum is from a low of 11 to a high of 77. In this measure, the higher the score, the lower the social class for an individual.

The equation for calculating socioeconomic status can be presented in the following form: (7 * educational level of Head of Household) + (4 * occupational level of Head of Household) (Hollingshead & Redlich, 1968), in which the following weightings were given:

1. Educational level of head of family household:
   a. Educational level or professional school after college (1 point)
   b. Graduation from a four-year college or university (2 points)
   c. More than two but less than four years of college work (3 points)
   d. Associate degree (4 points)
   e. Senior high school (5 points)
   f. Junior high school (6 points)
   g. Grade school or less (7 points)
2. Occupation of head of household:
   a. Higher executives of large concerns, proprietors, and major professionals, such as presidents of

large businesses, lawyers, physicians, teachers (1 point)

b. Business managers, proprietors of medium-sized businesses, and lesser professionals, such as farm owners, contractors, nurses, pharmacists, librarians (2 points)

c. Administrative personnel, owners of businesses, and major professionals, such as dealers, restaurant owners, shop managers, commercial artists, tool designers, surveyers (3 points)

d. Clerical and sales workers, technicians, and owners of small businesses, such as factory supervisors, bank tellers, bookkeepers, draftsmen, inspectors, investigators (4 points)

e. Skilled mannual employees, such as barbers, electricians, forman, machinists, maintenance workers, policemen, tool makers (5 points)

f. Semi-skilled employees and machine operators, such as truck drivers, guards, cooks, assembly line workers, hospital aides (6 points)

g. Unskilled employees, such as domestics, janitors, waiters (7 points)

The father's occupation, the father's income and education, financial aid, influential contacts, and other cultural environments, and socioeconomic conditions are the forces which might affect an individual at different times in life. Among these family

backgrounds, two variables, father's occupational and educational levels as indicators of a student's and his or her parents' socioeconomic status, were often included in literature related to the study of work values to yield useful predictive information. A study of the effect of social status on adult men's work values revealed that self-expression was a middle-class job value, while security was a working-class value (Centers, 1949). Class and cultural differences could prevent the individual in an organization from becoming socialized and achieving higher status (Godsell, 1981). Social class was also closely related to ethnic origin in the study of the relationships between social class and work values (Hedley, 1980). Therefore, socioeconomic status is a reliable predictor of work values.

The purpose of using socioeconomic status in this research is different from that of Duncan's Socioeconomic Index. The measure of socioeconomic status attempts to reveal the household's social positions, while the measure of Duncan's Socioeconomic Index shows the aspiration of the student. The student is not necessarily a head of the household as originally conceptualized by Duncan (1961).

Reason for entering community college. This variate was assigned as an indicator variable (employment-related reasons=1, nonemployment-related reasons=0). Community college students have been highly motivated for a variety of reasons. Reasons frequently cited in the related literature, for entering community colleges were categorized as (a) employment-related reasons, which included "looking

for employment or new position," "looking for a promotion," "meeting the certificate requirements," and "upgrading vocational knowledge and skills," and (b) nonemployment-related reasons, such as "self-fulfillment" and "general interest."

Community college students usually are highly motivated and committed to the occupations for which they are trained. Eyde (1960) studied the relationship between work values and work motivation of alumnae of a college. In the study, the alumnae with high work motivation chose masculine work values of interest, variety, mastery, and achievement, while the alumnae with a low level of work motivation preferred feminine values of independence and social service. For this reason, this variate was selected.

Analysis

Basically, two kinds of statistical methods were employed in this study. First, the descriptive statistics were aimed at delineating all the variables including both the criterion variables and the variates. These included two basic kinds of variables--categorical and continuous. For categorical variables, the Statistical Analysis System (SAS Institute, 1982) provided frequency counts and percentages. An indicator variable is a categorical variable with only two choices. On the other hand, SAS accumulated numbers of subjects, means, and standard deviations for continuous variables.

All remaining statistical techniques used in this study were inferential statistics, including the chi-square test, multiple regression analysis, Pearson product-moment correlation, the Chow

(1983) test, and the double cross-validation technique.

The following research questions were posed for this study.

Question Number One: What are the current characteristics of community college students?

The analysis included all the variates. Frequency counts and percentages were used for the report of those categorical variables including sex, race, participation in cooperative education programs, vocational area, and reason for entering community college. In addition, numbers of subjects, means, and standard deviations for the continuous variables of age, work experience, occupational aspiration, and socioeconomic status were reported as well. More detailed information about the relationships between variates were obtained by using the chi-square test.

Question Number Two: What is the structure of the correlates of work values for community college students?

The technique of principal-factor analysis was used to answer this question. The reasons for using this method are twofold. First, although the second part of the instrument was designed to solicit the scores for the original eight work values, the construct validity of the instrument could be greatly improved by combining the 48 items with common characteristics. Thus, the interpretations would be more "meaningful" than the original design of the eight work values. The second reason deals with the reduction of a large body of data to a more manageable set. The method can produce a smaller number of linear combinations of the original variables which account for most

of the variance. Therefore, considerable parsimony is assured (Harman, 1976).

The principal-factor analysis method is one of the classical and efficient factor extracting methods. The important distinction between principal-component analysis and principal-factor analysis can be made by comparing their objectives. The objective of principal-component analysis is to extract the maximum variance. In contrast to the maximum variance approach, principal-factor analysis is designed to maximally reproduce the correlations among the original variables.

The varimax rotation method was used in order to produce an orthogonal rotation. On the basis of the eigenvalues-greater-than-one rule and greater ability to account for the variability of the variance of factor scores, the number of the common factors were determined. The SCREE plot of the eigenvalues is helpful in deciding how many common factors to use. The SCREE plot is the plot of the numbers and the corresponding eigenvalues. It shows a sharp bend between two consecutive numbers of eigenvalues and therefore indicates the number of the new factors equal to the former number of these two consecutive numbers. The new summation scores were used as the criterion variables in the remainder of the research.

The equation for the common factor model is:

$$Y_{ij} = X_{i1}B_{1j} + X_{i2}B_{2j} + ... + X_{ik}B_{kj} + ... + X_{iq}B_{qj} + e_{ij}$$

where

Y_{ij} = value of the ith observation on the jth variable,

X_{ik} = value of the ith observation on the kth common factor,

B_{kj} = regression coefficient of the kth common factor for predicting the jth variable,

e_{ij} = value of the ith observation on the jth unique factor, and

q = number of common factors.

Question Number Three: What are the patterns of work values among community college students?

Factor analysis, used in Question Number Two, identified the number of common factors as well as their names. For each common factor, the factor score can be obtained by calculating either the sum or a weighted combination of the original variable scores. This study adopted the former calculating method and used the sum of the scores for all the variables of the same common factor as the new factor score.

Therefore, Ouestion Number Three was measured by reporting the means of students' scores on the new combinations of work values. In addition to the means, reported statistics included numbers of subjects and standard deviations. All the data were generated by the SAS (1982) procedures.

Question Number Four: What are the relationships among community college student characteristics and their work values?

There were two complementary approaches to answer this question. First, Peason product-moment correlations were calculated among the variates and the criterion variables. The second statistical method was regression analysis. The multiple regression model can be

described as follows:

$$Y_i = B_0 + B_1X_{i1} + B_2X_{i2} + \ldots\ldots + B_9X_{i9} + e_i$$

where

Y_i = criterion variable,

$X_{i1}, X_{i2}, \ldots\ldots\ldots, X_{i9}$ = variates,

$B_0, B_1, B_2, \ldots\ldots\ldots, B_9$ = regression coefficients, and

e_i = error term.

The criterion variables referred to those new work values defined by Question Number Two. The variates included sex, race, age, work experience, participation in cooperative education programs, occupational aspiration, vocational area, socioeconomic status, and reason for entering community college.

Question Number Five: Are there any differences among community college students studying various vocational areas?

Multiple regression was used in the design for this problem with the use of dummy variables. The model for this question can be specified as follows:

$$Y_i = B_0 + B_1V_1 + B_2V_2 + B_3V_3 + B_4V_4 + B_5X_{i1} + \ldots\ldots + B_{12}X_{i8} + e_i$$

where

Y_i = measure of criterion variable for student i,

V_1 = agricultural technologies (agricultural technologies=1, otherwise=0),

V_2 = business-related technologies (business-related technologies=1, otherwise=0),

V_3 = health technologies (health technologies=1, otherwise=0),

V_4 = miscellaneous technologies (miscellaneous technologies=1, otherwise=0),

X_{i1} = sex,

X_{i2} = race,

X_{i3} = age,

X_{i4} = work experience,

X_{i5} = participation in cooperative education programs,

X_{i6} = occupational aspiration,

X_{i7} = socioeconomic status,

X_{i8} = reason for entering community college,

$B_0, B_1, B_2, \ldots\ldots\ldots, B_{12}$ = regression coefficients, and

e = error term.

The basic comparison group was "industrial technologies." Using the above model, the comparisons of work values between "industrial technologies" and other technologies could be obtained. A test of a null hypothesis that B_1, B_2, B_3, and B_4 equals zero, respectively, was the key to answering this question.

Question Number Six: Are community college students' work values stable across two different community colleges?

According to Chow (1983, p. 61), one may ask whether the two sets of observations can be regarded as belonging to the same regression model by the F ratio,

$$\underline{F}(k, n1 + n2 - 2k) = \frac{(A - B) / k}{B / (n1 + n2 - 2k)}$$

where

k = number of regression coefficients in the regression,

n1 + n2 = number of observations in the samples,

A = residual sum of squares in the pooled regression with combined samples from two colleges,

and

B = sum of the residual sum of squares from the separate regressions.

If the above $\underline{F}$ value is greater than the critical value of $\underline{F}(k, n1 + n2 - 2k)$, we can reject the hypothesis that the sample of one community college students and the sample of the other community college are from the same population. It means that students' work values are not stable across the two different community colleges. Otherwise, we retain the hypothesis and conclude that students' work values are stable across the two schools.

The second approach to test the stability of work values across two community colleges is the double cross-validation method. The basic concepts of the double cross-validation method were discussed by Passmore and Irvin (1974). They suggested that a researcher should estimate the degree to which a regression equation developed on one group could be applied to another random sample selected from the same population and produce approximately the same results as the original

regression equation. More specifically, two regressions should be run first, using different groups of samples. Secondly, predict the scores of the dependent variables, for one group, using the regression coefficients from the equation for the other group. Finally, the original criterion scores and the predicted cross-validated scores obtained from the second step should be correlated. The dependent variables are those work values derived from Question Number Two. The independent variables include all the nine variates in this study. The multiple regression model for this question was the same as the one for Question Number Four.

CHAPTER IV

RESULTS

Introduction

In this chapter, the findings of the statistical analyses for this study are presented in the form of answers to the six research questions posed in Chapter I. These research questions include:

1. What are the current characteristics of community college students?

2. What is the structure of the correlates of work values for community college students?

3. What are the patterns of work values among community college students?

4. What are the relationships among community college student characteristics and the students' work values?

5. Are there any differences in work values among community college students studying various vocational areas?

6. Are community college students' work values stable across two different community colleges?

Among the research questions, Question Number One asks for information related to the current characteristics of community college students and the students' demographic data at the same time. Answers to Question Number Three provide data related to the criterion variables, i.e., work values. Each research question deals with one

important aspect of the relationships among work values and the students' characteristics. Therefore, specific conclusions and recommendations, which are presented in Chapter V, can be drawn from the results of the statistical analyses of these research questions.

Question Number One

What are the current characteristics of community college students?

Frequencies and percentages are reported in Table 2 for the categorical variables of sex, race, participation in cooperative education programs, vocational area, and reason for entering community college. In addition, some continuous variables are categorized according to the meaningful separations within their distribution ranges, and hence are included in Table 2 as well. Such continuous variables include age, socioeconomic status (SES), and occupational aspirations.

Data show that the 687 subjects in this study consisted of 307 males and 380 female students, most of whom were white and under 30 years of age. A majority of the students had experience in, or were currently participating in, cooperative education programs.

The socioeconomic status of the sample was divided into five social strata by class. Class I refers to the upper or upper-middle class; class II, to business executives or salaried professionals; class III, to administrators and management employees; class IV, to mostly skilled manual workers or semiskilled employees; and class V, to lower-level semiskilled workers and unskilled workers. A small

Table 2

Frequency Distribution of Selected Variates

Variate	Category	n	%
Sex	Male	307	44.687
	Female	380	55.313
Race	White	663	96.507
	Nonwhite	24	3.493
Age	Under 22	457	66.715
	23 - 30	136	19.854
	31 - 40	70	10.219
	Over 40	22	3.212
	Missing data	2	
Participation in cooperative education programs	Cooperative student	550	80.058
	Noncooperative student	137	19.942
SES	Class I	32	4.658
	Class II	101	14.702
	Class III	146	21.252
	Class IV	346	50.364
	Class V	62	9.025
Occupational aspiration	Low occupational aspiration	90	13.120
	Middle occupational aspiration	387	56.706
	High occupational aspiration	207	30.175
	Missing data	1	
Vocational area	Industrial Technologies	117	17.055
	Agricultural Technologies	137	19.971
	Business Technologies	176	25.656
	Health Technologies	140	20.408
	Miscellaneous Technologies	116	16.910
	Missing data	1	
Reason for entering community college	Employment		48.908
	Promotion		2.620
	Certification requirements		4.949
	Upgrading skills		20.961
	Self-fulfillment		17.322
	General interest		5.240

Note. The missing data were not included in the percentage calculation.

percentage of students were categorized in classes I and V, while class IV comprised approximately one-half of the sample. If the range of the Duncan's Socioeconomic Status scores is divided into three equal parts, most of the students fell into the middle occupational aspiration category. About a quarter of the student sample were enrolled in business technologies, followed by health technologies, agricultural technologies, industrial technologies, and, finally, miscellaneous technologies. In addition, it was found that most of the students enrolled in a community college for employment reasons, as opposed to nonemployment reasons.

The means and standard deviations for age, work experience, occupational aspiration, and SES scores are shown in Table 3. On the average, the community college student was between 17 and 30 years of age, had 3.80 years of work experience, had an occupational aspiration score of 53.78, and scored 43.5 points in the Hollingshead Socioeconomic Scale.

Two-dimensional chi-square tests further revealed that sex was significantly related to occupational aspiration, vocational area, and reason for entering community college. In order, the chi-square values for sex and occupational aspiration, sex and vocational area, and sex and reason were 71.69 ($df = 2$, $p < .0001$), 222.265 ($df = 4$, $p < .0001$), and 20.622 ($df = 1$, $p < .0001$). That is, male students showed lower occupational aspiration than female students, while female students showed more middle occupational aspiration than male students. Male students indicated that they were more likely to enroll in industrial technologies than female students, while female

Table 3

Means and Standard Deviations for Continuous Variates

Variate	N	M	SD
Age[a]	685	23.295	6.641
Work experience[b]	686	3.807	4.979
Occupational aspiration[c]	686	53.781	17.562
SES[d]	687	43.511	14.779

Note. [a]Age and [b]work experience are counted by years. [c]Occupational aspiration is in terms of the Duncan's Socioeconomic Status score. [d]SES is the Hollingshead Socioeconomic score.

students responded that they were more likely to enroll in health technologies than male students. Male students were more likely to seek employment than female students, while female students were more likely to have nonemployment reasons for entering community college than male students. However, two-dimensional chi-square tests failed to relate sex with SES, participation in cooperative education programs, and race. Also, SES was not related to occupational aspiration, vocational area, or reason for entering community college.

In summary, the community college students in this study tended to be whites under 30 years of age who had worked nearly four years, had received cooperative education, fell into social class IV, and had middle occupational aspirations. Also, sex was closely correlated with occupational aspiration, vocational area, and reason for entering community college.

Question Number Two

What is the structure of the correlates of work values for community college students?

A principal-factor analysis was conducted using the original 48 items of the Maryland Work Value Inventory. In order to find the minimum number of factors necessary to account for a maximum amount of variance of the variables, the eigenvalue-greater-than-one rule was applied in the selection of new factors first (see Table 4). However, only the first five factors were retained, which accounted for 88.1% of the variance of the original variables, which was not sufficient. By adding two more new factors, the cumulative proportion of variance

Table 4

Eigenvalues and Related Statistics of the New Factors

Value	Factor								
	1	2	3	4	5	6	7	8	9
Eigenvalues	11.928	3.366	1.460	1.178	1.015	0.947	0.712	0.570	0.522
Difference[a]	8.563	1.906	0.281	0.163	0.068	0.235	0.142	0.048	0.061
Proportion[b]	0.554	0.156	0.068	0.055	0.047	0.044	0.033	0.026	0.024
Cumulative proportion[c]	0.554	0.711	0.779	0.834	0.881	0.925	0.958	0.984	1.009

Note. Nine factors are retained by the factor analysis procedure.
[a]Difference between successive eigenvalues. [b]Proportion of variance accounted for by factor.
[c]Cumulative proportion of variance accounted for by the preceding factors.

accounted for by the seven factors reached a high of 95.8%. Hence, seven new common factors were obtained.

Second, in the process of calculating loadings for the given factors, SMC, the squared multiple correlation related to all other variables, was used so that the traits of new factors could be identified clearly by using the SMC values for the diagonal loadings in the computational factor matrix. Furthermore, variamax, a two-dimensional rotation method, was followed to yield a group factor which had high loadings on most of the variables, but had at least one near-zero or zero loading. This way, new factors would be easily identified. Higher rotated loadings for the items of each new factor are presented in Table 5. In this study, the summation score of the items with higher rotated loadings for each factor was calculated and used as a new factor score. However, items 6 and 10 were deleted from the list of the items when new factors were formed, due to their low loadings and a lack of explanatory traits that were common with other items.

One last and important aspect associated with factor analysis was naming the factors. Using common traits of the items of each factor, the researcher defined the following work values for the new-factors:

1. Satisfaction and Accomplishment (SATACC) - the relative extent to which people value work which provides a feeling of satisfaction and accomplishment.
2. Money and Prestige (MONPRES) - the relative extent to which people value money and prestige from work.
3. Contribution to Society (CONSOC) - the relative extent

Table 5

Rotated Factor Pattern and Loadings by Varimax Method Using 48 Items as Variables

Factor	Item[a] and Loading[b]									
1	1 (.593)	2 (.559)	5 (.365)	8 (.545)	9 (.515)	11 (.524)	13 (.499)	17 (.400)	21 (.454)	22 (.430)
	26 (.368)	36 (.488)	39 (.521)							
2	4 (.508)	7 (.474)	12 (.524)	15 (.370)	19 (.317)	23 (.318)	25 (.572)	38 (.422)	43 (.582)	(.541)
3	3 (.670)	18 (.720)	30 (.746)	37 (.737)						
4	28 (.473)	40 (.466)	41 (.557)	44 (.540)	45 (.644)					
5	31 (.483)	32 (.438)	33 (.655)	34 (.615)	35 (.418)					
6	14 (.481)	20 (.605)	24 (.665)	27 (.415)	42 (.418)					
7	29 (.309)	46 (.316)	47 (.595)	48 (.588)						

Note. Items 6 and 10 are deleted since they contributed little to the new factor variance. [a]Items are the questions shown in the questionnaire for this study. [b]Values in the rotated loadings of the items.

to which people work in order to make a contribution to society.

4. Status with Employer (STAEM) - the relative extent to which people value work that can provide an opportunity to enhance social positions and relationships with employers.
5. Need for Work (NEED) - the relative extent to which people need work.
6. Avoidance (AVOID) - the relative extent to which people value work so as to avoid the results of not working.
7. Job Advancement (JOBAD) - the relative extent to which people value work as a way of job advancement.

These new factors or work values are treated as the criterion variables in the following analyses.

For the purpose of evaluating Mietus's (1979) MWVI, the LIKRT program at the Computation Center of The Pennsylvania State University was employed (Kohr, 1974). The results of the descriptive statistics for each subscale and total score are shown in Table 6. The high coefficient alpha index of reliability for each of the new factors provides evidence that the new work value subscales were quite valid for this study. In addition, the high average item-total reliability shows that the factor analysis conducted in this study has qreatly improved the reliability of Mietus's work value construct.

In summary, the new structure of the correlates of work values for community college students was analyzed and obtained through the

Table 6

Descriptive Statistics for Subscale Factors

Variable name	SATACC[a]	MONPRES[b]	CONSOC[c]	STAEM[d]	NEED[e]	AVOID[f]	JOBAD[g]	Total
M	55.956	41.597	16.059	20.836	21.341	19.295	17.388	192.472
Number of items	13	10	4	5	5	5	4	46
Variance	28.527	23.788	6.692	7.899	7.142	10.565	4.180	301.773
Skewness	-0.317	-0.676	-0.645	-0.504	-0.608	-0.453	-0.665	-0.166
Kurtosis	-0.066	0.972	0.926	0.179	0.107	-0.120	0.925	-0.124
Coefficient Alpha Index of Reliability	0.844	0.826	0.868	0.800	0.765	0.706	0.714	0.931

Note. [a]SATACC = Satisfaction and accomplishment. [b]MONPRES = Money and prestige. [c]CONSOC = Contribution to society. [d]STAEM = Status with employer. [e]NEED = Need for work. [f]AVOID = Avoidance. [g]JOBAD = Job advancement.

principal-factor analysis technique. As a result of the analysis, seven new factors were extracted from the original 48 items. The cumulative proportion of variance accounted for by these factors reached 95.8%. These new factors, named by the common traits of the items of each of the factors, become the new work values of (a) satisfaction and accomplishment, (b) money and prestige, (c) contribution to society, (d) status with employer, (e) need for work, (f) avoidance, and (g) job advancement. They were then used as the criterion variables in this study. On the other hand, the Likert reliability test for each of the subscale factors further verified the high reliability of the new work-values construct for measuring the work values of community college students.

Question Number Three

What are the patterns of work values among community college students?

Factor analysis in the previous section resulted in the identification of seven new work values. The scores for these work values are the summation scores of the responses to each item included in each work value. Thus, the patterns of work values among community college students can be expressed in terms of their mean scores (see Table 7). The mean scores for the work values of SATACC, MONPRES, CONSOC, STAEM, NEED, AVOID, and JOBAD were 55.163, 41.000, 15.920, 20.595, 21.018, 19.117, and 17.198, respectively.

Table 7

Means and Standard Deviations for the New Work Value Scores

Work value	N	M	SD
SATACC	679	55.163	7.770
MONPRES	678	41.000	6.529
CONSOC	673	15.920	2.874
STAEM	676	20.595	3.377
NEED	678	21.018	3.519
AVOID	674	19.117	3.586
JOBAD	676	17.198	2.530

Question Number Four

What are the relationships among community college student characteristics and the students' work values?

Pearson product-moment correlation coefficients were calculated to detect the intercorrelations among the nine selected variates and the criterion variables. It was indicated that sex and age are two possible variates which affect the work values of community college students (see Table 8).

Regression relations were found to exist between the variates and work values. Regression results for work values showed that the variates of sex and age were negatively related to the work value of SATACC, while the rest of the variates were not related to SATACC. The variates of work experience and vocational area were positively related to the work value of MONPRES, and age was negatively related to MONPRES, while the rest of the variates were not related to MONPRES at all. The variate of participation in cooperative education was positively related to the work value of CONSOC, and sex was negatively related to CONSOC, while the rest of the variates were not related to CONSOC. The variate of work experience was positively related to the work value of STAEM and age was negatively related the STAEM, while the rest of the variates were not related to STAEM. The variate of work experience was positively related to the work value of NEED and age was negatively related to NEED, while the rest of the variates were not related to NEED. The variates of work experience and vocational area were positively related to the work value of AVOID,

Table 8
Pearson Product-Moment Correlation Coefficients Based on the Nine Selected Variates and the Criterion Variables

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Sex	.020	-.143*	-.029	-.042	-.237*	.384*	.067	.173*	-.107*	.074	-.170*	.108*	.037	-.017	-.032
2. Race		.007	.067	-.004	-.049	-.019	.019	.087*	.042	.086*	.063	.074	.076*	.048	.145*
3. Age			.691*	.116*	.070	-.010	-.073	-.058	-.032	-.170*	-.013	-.241*	-.183*	-.121*	-.151*
4. Work experience				.103*	.059	.048	-.022	-.022	.019	-.043	-.005	-.069	-.058	-.021	-.057
5. Participation in cooperative education programs					.029	-.042	-.054	-.001	.064	.024	.081*	-.006	.027	.003	.030
6. Occupational aspiration						.110*	-.012	-.021	.001	-.043	.025	-.038	.001	.017	.016
7. Vocational area							.057	.106*	-.017	.116*	-.088*	.086*	.066	.083*	.044
8. SES								.046	.013	.039	-.084*	-.019	.028	-.001	-.008
9. Reason for entering community college									-.005	.075	-.072	.055	.056	-.002	.012
10. SATACC										.680*	.662*	.665*	.700*	.518*	.701*
11. MONPRES											.395*	.758*	.676*	.598*	.636*
12. CONSOC												.394*	.441*	.336*	.451*
13. STAEM													.677*	.525*	.696*
14. AVOID														.457*	.678*
15. AVOID															.441*
16. JOBAD															

Note. The sample size for each correlation coefficient ranges from 669 to 678 subjects.
[a]This number is the largest sample size used in calculating r.
*p < .05.

and sex and age were negatively related to AVOID, while the rest of the variates were not related to AVOID. Finally, the variate of race was positively related to the work value of JOBAD, and the variates of sex and age were negatively related to JOBAD, while the rest of the variates were not related to JOBAD at all (see Table 9).

In summary, regression relations between all the variates and work values were shown to exist. Correlation results showed that sex and age were closely correlated with the work values of community college students. In general, the variates of sex, age, and work experience appeared to be closely related to the work values of community college students, according to the regression results for work values and the variates. However, the coefficients of multiple determinants indicated that only small percentages of the variations of the work value scores could be accounted for by these variates. That is, the strength of the regression relation for each work value and the variates was weak.

Question Number Five

> Are there any differences in work values among community college students studying various vocational areas?

The dummy variable technique was used in the analysis for answers to this question. In addition to the advantages of using regression models, the dummy variable technique has the ability to show the directions and magnitudes of differences between dummy variables. In this case, the "industrial technologies" group was used as a reference

Table 9

Regression Results of Work Values of Community College Students

Variable	SATACC	MONPRES	CONSOC	STAEM	NEED	AVOID	JOBAD
Sex	-2.261* (0.691)	-0.382 (0.569)	-0.926* (0.254)	0.157 (0.289)	-0.267 (0.304)	-0.641* (0.318)	-0.500* (0.218)
Race	1.600 (1.651)	2.064 (1.358)	1.089 (0.604)	0.690 (0.688)	0.642 (0.726)	1.062 (0.776)	1.497* (0.520)
Age	-0.136* (0.063)	-0.255* (0.053)	-0.031 (0.023)	-0.181* (0.026)	-0.145* (0.028)	-0.122* (0.030)	-0.087* (0.020)
Work experience	0.134 (0.084)	0.162* (0.069)	0.013 (0.031)	0.112* (0.035)	0.080* (0.037)	0.087* (0.039)	0.037 (0.026)
Participation in cooperative education	0.129 (0.746)	0.769 (0.614)	0.545* (0.274)	0.157 (0.311)	0.403 (0.329)	0.170 (0.344)	0.281 (0.235)
Occupational aspiration	-0.014 (0.018)	-0.017 (0.015)	-0.001 (0.006)	-0.004 (0.007)	0.001 (0.008)	0.001 (0.008)	0.001 (0.006)
Vocational area	0.804 (0.880)	2.065* (0.723)	-0.102 (0.322)	0.592 (0.366)	0.627 (0.386)	1.083* (0.404)	0.520 (0.277)
SES	0.009 (0.020)	0.009 (0.017)	-0.014 (0.007)	-0.010 (0.008)	0.003 (0.009)	-0.004 (0.009)	-0.003 (0.006)
Reason for entering community college	0.092 (0.725)	0.627 (0.596)	-0.340 (0.267)	0.114 (0.304)	0.204 (0.321)	-0.130 (0.335)	-0.082 (0.230)
Intercept	57.403* (2.623)	44.094* (2.158)	16.883* (0.963)	24.085* (1.093)	23.124* (1.153)	20.982* (1.207)	17.969* (0.826)
R^2	.026	.061	.049	.087	.052	.038	.052
F(df1, df2)	F(9, 667) =2.01*	F(9, 665) =4.80*	F(9, 661) =3.79*	F(9, 663) =7.07*	F(9, 665) =4.05*	F(9, 662) =2.92*	F(9, 663) =4.09*
Number of observations	677	675	671	673	675	672	673

Note. Values in the parentheses are the standard errors of the coefficients.
*$p < .05$.

group for comparisons among all vocational areas. The differences of the mean scores among the five vocational areas thus could be described by the regression coefficients of the dummy variables, i.e., V1, V2, V3, and V4. The intercorrelations among the variates and work values are reported in Table 10.

Results of the regression of the work value of SATACC for the 12 variates are presented in Table 11. No relationship between SATACC and the variates was found. Holding other factors constant, regression results for the work value of MONPRES and the variates revealed that the vocational students in industrial technologies did not differ in mean MONPRES scores from the vocational students in agricultural technologies.

Holding other factors the same, the mean MONPRES score for the vocational students in industrial technologies was 2.621 points higher than the mean MONPRES score for the vocational students in business technologies, 3.044 points higher than the mean MONPRES score for the vocational students in health technologies, and 2.034 points higher than that of the vocational students in miscellaneous technologies (see Table 11).

On the average, holding other factors constant, the vocational students in industrial technologies received the same mean scores on the work value of CONSOC as those students in agricultural technologies, business technologies, and the miscellaneous technologies. On the other hand, the vocational students in health technologies scored 1.405 points higher on CONSOC than those students in industrial technologies.

Table 10

Pearson Product-Moment Correlation Coefficients Based on 19 Variables

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. V1	-.293*	-.253*	-.225*	.125*	.052	-.016	.022	.197*	-.316*	.057	-.020	.033	.078*	-.017	.034	.016	.044	.037
2. V2		-.297*	-.265*	-.144*	-.057	-.033	.003	-.126*	.464*	.032	.084*	-.035	-.065	-.101*	-.007	-.026	-.027	-.034
3. V3			-.228*	-.448*	.054	.207	.044	.136*	.060	-.110*	-.161*	.039	-.115*	.231*	-.179*	-.056	-.050	-.018
4. V4				.131*	-.024	-.156*	-.121*	-.167*	-.378*	-.035	-.009	-.021	.001	-.023	.079*	.009	-.044	-.022
5. Sex					.020	-.143*	-.029	-.042	-.237*	.066	.173*	-.107*	.074	-.170*	.108*	.037	-.017	-.032
6. Race						.007	.067	-.004	-.049	.019	.087*	.042	.086*	.063	.074	.076*	.048	.145*
7. Age							.691*	.115*	.070	-.072	-.058	-.032	-.170*	-.013	-.241*	-.183*	-.121*	-.151*
8. Work experience								.103*	.059	-.022	-.022	.019	-.043	-.005	-.069	-.058	-.021	-.057
9. Participation in cooperative education programs									.029	-.054	-.001	.064	.024	.081*	-.006	.027	.003	.030
10. Occupational aspiration										-.012	-.021	.001	-.043	.025	-.038	.001	.017	.016
11. SES											.046	.013	.039	-.084*	-.019	.028	-.001	-.008
12. Reason for entering community college												-.005	.075	-.072	.055	.056	-.002	.012
13. SATACC													.680*	.662*	.665*	.700*	.518*	.701*
14. MONPRES														.395*	.758*	.676*	.598*	.636*
15. CONSOC															.394*	.441*	.336*	.451*
16. STAEM																.677*	.525*	.696*
17. NEED																	.457*	.678*
18. AVOID																		.441*
19. JOBAD																		

Note. The sample size for each correlation coefficient ranges from 669 to 687 subjects.
[a]This number is the largest sample size used in calculating r.
*p < .05.

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Table 11

Regression Results of Work Values Among Community College Students With Different Vocational Majors

Variable	SATACC	MONPRES	CONSOC	STAEM	NEED	AVOID	JOBAD
V1	-0.120	-0.983	0.307	-0.482	-0.437	-0.547	-0.228
	(1.091)	(0.896)	(0.393)	(0.453)	(0.480)	(0.500)	(0.344)
V2	-1.273	-2.621*	-0.305	-0.709	-0.786	-1.242*	-0.677*
	(1.018)	(0.834)	(0.368)	(0.422)	(0.448)	(0.466)	(0.320)
V3	-0.792	-3.044*	1.405*	-1.543*	-0.686	-1.399*	-0.613
	(1.200)	(0.983)	(0.433)	(0.497)	(0.527)	(0.551)	(0.378)
V4	-0.710	-2.034*	0.337	-0.258	-0.526	-1.347*	-0.541
	(1.143)	(0.936)	(0.412)	(0.475)	(0.503)	(0.524)	(0.362)
Sex	-2.322*	-0.785	-0.551*	-0.170	-0.308	-0.773*	-0.555*
	(0.744)	(0.785)	(0.269)	(0.308)	(0.327)	(0.341)	(0.234)
Race	1.494	2.069	0.836	0.850	0.625	1.042	1.467*
	(1.663)	(1.362)	(0.599)	(0.689)	(0.731)	(0.778)	(0.524)
Age	-0.137*	-0.242*	-0.050*	-0.166*	-0.144*	-0.119*	-0.086*
	(0.065)	(0.053)	(0.024)	(0.027)	(0.028)	(0.030)	(0.020)
Work experience	0.134	0.150*	0.029	0.101*	0.080*	0.083*	0.036
	(0.084)	(0.070)	(0.031)	(0.035)	(0.037)	(0.039)	(0.027)
Participation in cooperative education programs	1.092	0.563	0.331	0.263	0.358	0.029	0.203
	(0.781)	(0.641)	(0.282)	(0.324)	(0.344)	(0.359)	(0.246)
Vocational aspiration	-0.003	-0.004	0.008	-0.001	0.004	0.003	0.004
	(0.022)	(0.018)	(0.008)	(0.009)	(0.010)	(0.010)	(0.007)
SES	0.009	0.006	-0.011	-0.012	0.003	-0.005	-0.003
	(0.020)	(0.017)	(0.007)	(0.008)	(0.009)	(0.009)	(0.006)
Reason for entering community college	0.174	0.662	-0.181	0.068	0.228	-0.123	-0.060
	(0.734)	(0.601)	(0.266)	(0.306)	(0.325)	(0.338)	(0.232)
Intercept	57.747*	45.670*	16.278*	24.418*	23.556*	22.073*	18.363*
R^2	.028	.070	.081	.100	.529	.044	.056
F(df1, df2)	F(12, 664) =1.60	F(12, 662) =4.13*	F(12, 661) =4.82*	F(12, 663) =6.09*	F(12, 665) =3.08*	F(12, 662) =2.56*	F(12, 663) =3.24*
Number of observations	677	675	671	673	675	672	673

Note. Values in the parentheses are the standard errors of the coefficients.
*$p < .05$.

Regression results for the work value of STAEM and the variates are presented in Table 11. The results indicate that vocational students in industrial technologies earned the same mean score on STAEM as the vocational students in agricultural technologies, business technologies, and miscellaneous technologies, holding other factors constant. On the other hand, vocational students in industrial technologies, on the average, scored 1.543 points higher than the vocational students in health technologies.

Regression results show that there was no difference in the mean scores on STAEM among the five different vocational student groups, holding other factors constant. That is, on the average, students in all groups scored the same score on STAEM.

Regression results of the work value of AVOID and the variates indicate that there was no difference on the mean AVOID scores between the vocational students in industrial technologies and the vocational students in agricultural technologies. However, holding other factors constant, vocational students in industrial technologies, on the average, scored 1.242 points higher than vocational students in business technologies, 1.399 points higher than those students in health technologies, and 1.347 points higher than the vocational students in miscellaneous technologies (see Table 11).

Regression results for the work value of JOBAD and the 12 variates indicate that the vocational students in industrial technologies scored 0.677 point higher than the vocational students in business technologies, holding other factors constant. However, the mean score on JOBAD for the vocational students in industrial

technologies did not differ from those for the vocational students in agricultural technologies, health technologies, and miscellaneous technologies.

In conclusion, holding other factors constant, the mean scores of work values for the vocational students in industrial technologies did not differ from the mean scores of work values for the vocational students in agricultural technologies. The industrial technology students only earned slightly higher mean scores on the work values of MONPRES, AVOID, and JOBAD than the business students, while the two groups of students had the same mean scores on the rest of the work values. The majority of health students scored lower on the work values of MONPRES, STAEM, and AVOID than the vocational students in industrial technologies, and higher on the work value of CONSOC, while the two groups of students had the same mean scores for the rest of the work values. Finally, vocational students in industrial technologies scored higher on the work values of MONPRES and AVOID than those students in miscellaneous technologies, while the two groups of students had the same mean scores on the rest of the work values.

Question Number Six

Are community college students' work values stable across two different community colleges?

Two different approaches were used in the analysis for this research question. The Chow (1983) test was conducted first, followed by the cross-validation technique. The Chow test can be performed

only when regression relations between work values and the variates exist. The regression results for work values and the variates for the students of the Harrisburg Area Community College (HACC) and the Williamsport Area Community College (WACC) are presented in Tables 12 and 13. It is evident that regression relations between the work values of CONSOC and the selected variates existed in the regression models using both the HACC and WACC student samples. Therefore, only two Chow tests were computed to test the stability of the work values of contribution to society and avoidance across the two community colleges. The results of the Chow tests indicated that the hypothesis that the sample of the HACC students and the sample of the WACC students were from the same population was rejected on the work values of contribution to society and avoidance. This means that the students from one community college had work values of contribution to society and avoidance that were different from those of the students from the other community college.

The second approach used for testing the stability of work values was the cross-validation technique. The results of cross-validation analyses are reported in Table 14. Although data show that some correlations between the work-value scores and the corresponding predicted work-value scores were statistically significant, the magnitudes of the correlation coefficients were still not large enough for it to be claimed that strong correlations existed among the three regression models for each work value.

In conclusion, for the purpose of testing the stability of community college students' work values, the results of the Chow

Table 12

Regression Results of Work Values for Harrisburg Area Community College Students

Variable	SATACC	MONPRES	CONSOC	STAEM	NEED	AVOID	JOBAD
Sex	-2.904* (1.063)	-0.521 (0.947)	-0.679 (0.367)	-0.132 (0.448)	-0.062 (0.473)	-0.506 (0.444)	-0.395 (0.316)
Race	0.139 (1.948)	0.715 (1.734)	0.644 (0.666)	-0.131 (0.818)	0.010 (0.867)	1.982* (0.812)	0.997 (0.576)
Age	-0.035 (0.078)	-0.164* (0.069)	0.009 (0.027)	-0.113* (0.033)	-0.059 (0.034)	-0.047 (0.032)	-0.053* (0.023)
Work experience	0.092 (0.104)	0.167 (0.093)	-0.052 (0.036)	0.087 (0.044)	0.034 (0.046)	0.042 (0.043)	0.013 (0.031)
Participation in cooperative education programs	0.190 (1.170)	-0.309 (1.042)	0.009 (0.400)	-0.249 (0.492)	-0.117 (0.524)	-0.262 (0.491)	-0.206 (0.346)
Occupational aspiration	-0.026 (0.032)	-0.031 (0.028)	-0.002 (0.011)	-0.013 (0.013)	0.008 (0.014)	-0.007 (0.013)	-0.017 (0.009)
Vocational area	-0.007 (1.437)	2.127 (1.279)	-0.920 (0.493)	0.146 (0.604)	0.093 (0.640)	0.444 (0.599)	0.426 (0.426)
SES	0.043 (0.031)	0.015 (0.027)	-0.005 (0.011)	0.004 (0.013)	0.006 (0.014)	0.028* (0.013)	0.001 (0.009)
Reason for entering community college	-0.842 (1.063)	0.044 (0.947)	-0.616 (0.364)	0.105 (0.447)	-0.053 (0.475)	-0.486 (0.445)	-0.298 (0.315)
Intercept	56.707*	43.812*	16.849*	23.345*	21.374*	18.174*	18.642*
R^2	.051	.037	.086	.049	.015	.056	.050
F(df1, df2)	F(9, 295) =1.77*	F(9, 295) =0.25	F(9, 292) =3.07*	F(9, 294) =1.70*	F(9, 294) =0.49	F(9, 293) =1.95*	F(9, 293) =1.73
Number of observations	305	305	302	304	304	303	303

Note. Values in the parentheses are the standard errors of the coefficients.
*$p < .05$.

Table 13

Regression Results of Work Values for Williamsport Area Community College Students

Variable	SATACC	MONPRES	CONSOC	STAEM	NEED	AVOID	JOBAD
Sex	-1.498 (0.954)	-0.424 (0.730)	-0.915* (0.363)	0.415 (0.391)	-0.527 (0.411)	-0.522 (0.459)	-0.550 (0.315)
Race	3.748 (3.210)	3.607 (2.456)	2.342 (1.220)	1.627 (1.315)	1.472 (1.383)	-1.866 (1.672)	2.155* (1.061)
Age	-0.308* (0.112)	-0.412* (0.088)	-0.117* (0.044)	-0.298* (0.045)	-0.309* (0.048)	-0.291* (0.057)	-0.141* (0.037)
Work experience	0.280 (0.148)	0.210 (0.115)	0.160* (0.058)	0.179* (0.060)	0.210* (0.064)	0.175* (0.073)	0.085 (0.049)
Participation in cooperative education programs	1.621 (0.984)	0.959 (0.752)	1.037* (0.374)	1.884 (0.403)	0.575 (0.424)	0.389 (0.473)	0.485 (0.325)
Occupational aspiration	0.007 (0.023)	0.001 (0.017)	-0.004 (0.009)	0.008 (0.009)	-0.001 (0.010)	0.009 (0.011)	0.009 (0.007)
Vocational area	1.260 (1.144)	1.931 (0.876)	0.529 (0.435)	0.857 (0.469)	0.886 (0.493)	1.332* (0.550)	0.666 (0.378)
SES	-0.021 (0.028)	-0.003 (0.021)	-0.014 (0.010)	-0.022 (0.011)	0.003 (0.012)	-0.024 (0.013)	-0.008 (0.009)
Reason for entering community college	1.476 (1.013)	1.472 (0.775)	-0.035 (0.386)	0.450 (0.420)	0.636 (0.441)	0.425 (0.490)	0.222 (0.339)
Intercept	57.530*	45.226*	16.666*	25.076*	25.441*	27.010*	17.890*
R^2	.048	.100	.077	.157	.127	.104	.083
F(df1, df2)	F(9, 362) =2.04*	F(9, 360) =4.43*	F(9, 359) =3.35*	F(9, 359) =7.44*	F(9, 361) =5.86*	F(9, 359) =4.63*	F(9, 360) =3.62*
Number of observations	372	370	369	369	371	369	370

Note. Values in the parentheses are the standard errors of the coefficients.
*$p < .05$.

Table 14

Cross-Validation Coefficients for Stability of Work Value Patterns

Regression model	Total	HACC	WACC
		SATACC	
Total*			.117* (677)
HACC			
WACC*	.163* (372)		
		MONPRES	
Total*			.128* (675)
HACC			
WACC*	.297* (370)		
		CONSOC	
Total*		.168* (671)	.150* (671)
HACC*	.226* (302)		.011 (302)
WACC*	.208* (369)	.054 (369)	
		STAEM	
Total*			.292* (673)
HACC			
WACC*	.387* (369)		
		NEED	
Total*			.225* (675)
HACC			
WACC*	.351* (371)		
		AVOID	
Total*		.099* (672)	.157* (672)
HACC*	.136* (303)		.017 (303)
WACC*	.266* (369)	-.013 (369)	
		JOBAD	
Total*			.220* (673)
HACC			
WACC*	.274* (370)		

Note. Values in the parentheses are the numbers of observations used in the regression models. *$p < .05$.

(1983) tests were consistent with the results of the cross-validation tests. It is reasonable to conclude that stability of the students' work values across these two community colleges did not exist.

Summary

Community college students in this study tended to be white and between 17 and 30 years of age. The social status of most of the students was classified as class IV (skilled and semiskilled working people). They had been working for 3.8 years, had joined cooperative education programs, and had middle occupational aspirations. The sex variate was closely correlated with the variates of occupational aspiration, vocational area, and reason for entering community.

Seven new work-value factors were extracted from the original 48 items. The cumulative proportion of variance accounted for by these factors reached 95.8%. The names of these factors were satisfaction and accomplishment, money and prestige, contribution to society, status with employer, need for work, avoidance, status with employer, and job advancement. High Likert reliability for subscale factors further verified the reliability of the new construct of work values for measuring the work values of community college students.

Using the new work-value scales developed in this study, the patterns of community college students' work values could be expressed in terms of their mean scores. The means for SATACE, MONPRES, CONSOC, STAEM, NEED, AVOID, and JOBAD were 55.163, 41.000, 15.920, 20.595, 19.117, and 17.198 points, respectively.

Relationships among community college student characteristics and

the students' work values were found to exist. The variates of sex, age, and work experience appeared to be closely related to their work values; however, only weak relations between the students' work values and the variates were found.

In general, holding other factors constant, the mean scores on work values for the vocational students in industrial technologies did not differ from the mean scores for the vocational students in agricultural technologies. The industrial technologies students earned only slightly higher mean scores on the work values of MONPRES, AVOID, and JOBAD than the business students, while the two groups of students had the same mean scores on the rest of the work values. Health students, on the average, scored lower on the work values of MONPRES, STAEM, and AVOID than the vocational students in industuial technologies, and higher on the work value of CONSOC, while the two groups of students had the same mean scores on the rest of the work values. Finally, vocational students in industrial technologies scored higher on the work values of MONPRES and AVOID than the vocational students in miscellaneous technologies, while the two groups of students had the same mean scores on the rest of the work values.

The stability of the students' work values across the two community colleges was also tested. The results of the Chow (1983) tests and the cross-validation tests both indicated that such stability did not exist. That is, students in the two different community colleges had different work values.

CHAPTER V

SUMMARY

Introduction and Review

This chapter is composed of three parts: (a) a synthesis of the research questions and findings, (b) a discussion of the implications of the relationships among characteristics of post-secondary vocational students and the students' work values, and (c) general suggestions and suggestions for further studies which examine these relationships. In order to provide an overall picture of this research, a review of the statement of problem, procedures, and findings is presented in this section.

Statement of the Problem

The purpose of this study is to investigate the relationships among characteristics of vocational students enrolled in community colleges and the students' work values. To pursue this investigation, the following research questions were posed:

1. What are the current characteristics of community college students?

2. What is the structure of the correlates of work values for community college students?

3. What are the patterns of work values among community college students?

4. What are the relationships among community college student characteristics and the students' work values?

5. Are there any differences in work values among community college students studying various vocational areas?

6. Are community college students' work values stable across two different community colleges?

Procedures

The vocational student sample consisted of 687 subjects enrolled in Fall Semester 1984 in two community colleges in Pennsylvania; 310 subjects were drawn from Harrisburg Area Community College and 377 from Williamsport Area Community College. The stratified random sampling procedure was used to provide the best assurance that a representative sample of the population was being selected. The strata represented five categories from which equal numbers of subjects were drawn: (a) industrial technologies, (b) agricultural technologies, (c) business technologies, (d) health technologies, and (e) miscellaneous technologies.

The survey instrument used in this study was composed of two parts. Part I consisted of 10 items requesting demographic information or characteristics of the students. These characteristics or variates included (a) race, (b) sex, (c) age, (d) work experience, (e) participation in cooperative education programs, (f) occupational aspiration, (g) vocational area, (h) socioeconomic status, and (i) reason for entering community college. Part II consisted of 48 items which were the Maryland Work Value Inventory (MWVI) originally

designed by Mietus (1977). The questionnaires were administered to students in classrooms by the vocational teachers who agreed to participate in the research. Before the administration of the questionnaires, participants were informed of the purpose of the study by teachers; their participation was voluntary.

In order to analyze the data collected for this research, some statistical methods were employed. The descriptive statistics were means and frequency distributions. The inferential statistics included the chi-square test, multiple regression analysis, Pearson product-moment correlation, the Chow (1983) test, and the double cross-validation technique.

Findings

Community college students in this study tended to be white and between 17 and 30 years of age. The social status of most of the students was classified as class IV (skilled and semiskilled working people), and they had been working for nearly four years, had joined cooperative education programs, and had middle occupational aspirations. The sex variate was closely related to the variates of occupational aspiration, vocational area, and reason for entering community college.

Seven new work value factors were obtained as a result of the factor analysis of the original 48 items. They were (a) satisfaction and accomplishment (SATACC), (b) money and prestige (MONPRES), (c) contribution to society (CONSOC), (d) status with employer (STAEM), (e) need for work (NEED), (f) avoidance (AVOID), and (g) job

advancement (JOBAD).

Weak but consistent relationships among community college student characteristics and the students' work values were found to exist. Among the variates, sex, age, and work experience were closely related to work values of these students. Further analyses revealed that vocational students in industrial technologies had the same mean scores of work values as those for the vocational students in agricultural technologies and, in general, had slightly higher mean scores of work values than those students in business technologies, health technologies, and miscellaneous technologies. However, it was observed that students in the two different community colleges had different work values.

Discussion

The results of this study suggest that weak but consistent relationships existed among community college student characteristics and the students' work values, and that the relationships did not stabilize across the two different community colleges. These results are consistent with the findings of Corine (1978), Leverson (1977), Osipow (1968), Thomas (1974), and Zytowski (1970).

Specifically, male vocational students valued satisfaction and accomplishment less than female vocational students, and older community college students tended to value satisfaction and accomplishment less than younger students. Satisfaction and accomplishment were not influenced by race, work experience, participation in cooperative education programs, occupational

aspiration, vocational area, SES, or reason for entering community college. These findings are different from those of Thomas (1974), Wu (1977), and Kalleberg (1977). Perhaps male students had higher expectations of work than female students. Older students felt less satisfied and accomplished than their younger counterparts because the older ones were no longer looking for entry-level employment, but rather for competitive promotion opportunities.

For the work value of money and prestige, students with more work experience and those who were in industrial technology majors valued money and prestige more than the students with less work experience and those in other technology majors. These results are understandable, because economic rewards are the basic needs of people and students with more work experience and those in industrial technologies usually expect to earn more money and prestige than those students in other technological fields. In addition, older students put more emphasis on factors other than money and prestige than younger students.

Participation in cooperative education was positively related to the work value of contribution to society. By Kalleberg's (1977) notion, socialization, nonwork social roles, and maturity are the three factors which can explain this phenomenon. Female students indicated lower work value for contribution to society. This might be a result of the influence of sex role models and childhood experience.

As work experience increased, the work value for status with employer increased. This can be explained, by and large, by the belief that hard work will finally be paid off. Conversely, age was

negatively related to status with employer, perhaps because as people grow older, they accumulate more skills and work experience which enable them to change their careers easily.

The more work experience the student had, the more need for work he or she realized. The learning of work attitudes from work experience is a possible explanation for this result. Older students, who often have stable incomes, might feel less need for work and may have the luxury of being able to spend more of their time on leisure and other nonwork activities.

Students with more work experience and those majoring in industrial technologies were more likely to avoid the results of not working than students with less work experience and those majoring in other technologies. People who have been employed for a period of time gradually form the habit of working. In addition, female students and younger students were more likely to avoid the results of not working than male students and older students. It is apparent that discrimination based on sex and age still play an important role in reducing the chances of their employment.

Race differences in the work value of job advancement were indicated by the findings. Godsell (1981) noted that race was usually interfaced with culture and social class. In his explanation of these race differences, inadequate socialization of minority groups into organizational life might reduce individuals' occupational mobility. On the other hand, female students and younger students seemed to value work as a way of job advancement more than their male and older counterparts. Discrimination based on sex and age, and the relative

scarcity of work opportunities for females and younger people, are probably two major underlying reasons for this result.

The findings concerning characteristics of community college students in this study are congruent with the characteristics identified in the review of literature presented in Chapter II. That is, they were job-oriented, could be classified as falling into the middle to lower working classes, and were between the ages of 17 and 30. Although diverse characteristics were found, the community college student population still can be considered as a homogeneous group, with most of the students sharing similar characteristics.

The results of factor analysis conducted in this study have confirmed the construct reliability of the new work value scales. Hence, the accuracy of the subsequent statistical analyses was assured. Patterns of the new work values provided the work value norms of community college students for future research studies.

However, because of the weak relationships among student characteristics and work values in this study, more influencing factors should be added to the regression models so that stronger conclusions could be derived from the findings. Some possible factors which should be added to the models include (a) income level, (b) city population, (c) students' maturity, (d) interest, (e) aptitude, (f) academic achievement, (g) working environment, and (h) other personality factors. Other alternatives for conducting this study are to use nonlinear regression models and select different samples. This may result in different findings and conclusions.

Work value differences among students studying different

vocational areas were considerably small compared with the magnitudes of the mean scores of work values. The largest score difference for work values was the difference in mean scores for money and prestige between industrial technology students and health technology students, i.e., 3.044 points. In effect, industrial technology students scored slightly higher on almost all the work value scales than students in business tecnologies, health technologies, and miscellaneous technologies, but had the same mean scores as students in agricultural technologies. This implies that although work value differences existed among students studying different vocational areas, vocational students in community colleges should be recognized as homogeneous groups with respect to their work values, regardless of their different vocational majors.

Previous literature strongly suggests the existence of the stability of work values relative to sex and grade level (Hales & Fenner, 1972; Searle, 1962). However, in this study, when the stability of work values across two different community colleges was tested, it indicated that students in different community colleges had different work values. Possible affecting factors may include student cultures, curriculum emphases, types of cities where the community colleges were located, teaching and learning environments, and composition of student populations in addition to the student characteristics specified in this study.

Recommendations

Based on the findings of this study, some important issues arose.

These issues can be addressed through recommendations which take into consideration the following: (a) a new construct of work values for community college students, (b) weak but consistent relationships, (c) needs for various subpopulations, and (d) further research.

A New Construct of Work Values for Community College Students

Community college students have provided a unique target group in this research study of the relationships among student characteristics and the students' work values. Hence, Mietus's (1977) Maryland Work Value Inventory was not valid for this special population. The results of the factor analysis in this study suggested the following seven work value categories: (a) satisfaction and accomplishment, (b) money and prestige, (c) contribution to society, (d) status with employer, (e) need for work, (f) avoidance, and (g) job advancement. Since this construct of work values for community college students was verified to be reliable by testing its coefficient alpha index of reliability and since, to date, no other valid work value construct is available for this population, it is recommended that these work value categories be used in similar studies. At the same time, the mean scores of these work value categories can serve as references for further research.

Weak but Consistent Relationships

Weak but consistent relationships existed among characteristics of communtiy college students and the students' work values. Because small $\underline{R}^2$ values were found in the analysis, researchers must be

cautious when interpreting the results and using them to predict work values. It would be more desirable to explain only the relationships between work values and the variates that have relatively larger significant regression coefficients, so as to avoid fallacious conclusions.

Needs for Various Subpopulations

In this study, female students and younger students were more likely to try to avoid the results of not working and to consider work to be an important way of job advancement than male students and older students. Implicitly, job discrimination based on sex and age seemed to surface. It is therefore suggested that women and younger students be helped in establishing their own work values which are congruent with their essential needs and in going through the processes of career decision-making and occupational preparation.

Recommendations for Further Research

The following recommendations are offered for future research studies:

1. Investigations of more factors which influence the development of work values should be conducted. Student characteristics are not necessarily limited to those specified in this study. Other possible influencing characteristics include maturity, working environment, interest, expected income level, motivation, location of residence and school, and so on.

2. A more in-depth longitudinal study of the relationships between communtiy college student characteristics and the students'

work values is needed.

3. Replications of this study using different target populations to verify the results of this study or to detect changes in work values of community college students over time are recommended. Of course, the larger sample size it is, the more reliable the results will be.

4. Qualitative studies examining the relationships among community college student characteristics and the students' work values should be conducted for comparative purposes. These qualitative methods should include case studies, in-depth interviews, and participant observations.

5. Since industrial technology students exhibited almost the same mean work-value scores as students in agricultural technologies, business technologies, health technologies, and miscellaneous technologies, work values of community college students can be considered homogeneous. Therefore, studies examining the relationships among work values and students' characteristics at other institutional or technical levels are recommended. Counselors, vocational teachers, and administrators can utilize this information to determine work-value changes at different levels.

6. In addition to work values, other personality factors, such as interest, maturity, and vocational aspirations, affect students' career behavior and choice. It is recommended that the relationships between these personality factors and the students' characteristics be investigated so as to fully understand the career behavior and choice of these students.

7. Studies investigating the differences in work values between community college students enrolled in transfer programs and those in vocational programs should be examined to add to the completeness of the knowledge which exists in the literature.

8. Studies examining nonlinear regression relationships among community college student characteristics and the students' work values are needed to compare with the results of the linear regression relationships in this study.

9. Theoretical and empirical studies to determine the relationships among students' characteristics, work values, and occupational requirements at the post-secondary level are recommended.

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APPENDIX A

WORK VALUE QUESTIONNAIRE

THE PENNSYLVANIA STATE UNIVERSITY
DIVISION OF OCCUPATIONAL AND VOCATIONAL STUDIES

WORK VALUE QUESTIONNAIRE

The purpose of this study is to determine the work values held by community college students and the relationships between work values and student characteristics. It is intended that the results of this study can assist us in better understanding the studied relationships and thus provide some empirical evidence for practitioners in the fields of vocational education, guidance, and counseling.

DIRECTIONS:

This questionnaire consists of two parts. The first part asks questions which will help us obtain basic background information. The second part asks questions about your feelings associated with work. Your responses should reflect the feelings that you presently have about work, and not the idea that you believe are the most prevalent in society today. There are NO RIGHT and WRONG answers and all answers will be kept confidential. Thank you very much for your assistance.

PART I: BACKGROUND INFORMATION

Please check the spaces or write in your answers.

1. Sex: ____ a. Male ____ b. Female

2. Race: ____ a. American Indian, ____ b. Black, ____ c. Mexican American
____ d. Oriental, Asian American, ____ e. Puerto Rican
____ f. white or Caucasian, ____ h. other

3. Age: ____ years old

4. How long have you worked in industry/business? (e.g., machinist, salesperson, electrician, etc.) (If in more than one occupations, please specify)

____ a. Number of years in _____ occupation
____ b. Number of years in _____ occupation
____ c. Number of years in _____ occupation

5. Have you participated in cooperative education programs at a community college? ____ a. Yes ____ b. No

6. Please specify the occupation you plan to enter after you graduate from your program of study.

_____

7. please specify your major.

_____

8. What is the highest educational level of the head of your household?

____ a. Grade school, ____ b. Junior high school, ____ c. Senior high school, ____ d. Associate-degree college, ____ e. More than two but less than four years of college work, ____ f. Four-year college or university, ____ g. Graduate school

9. The occupation of the head of your household is:

_____

10. What is your major reason for entering community college?

____ a. Looking for employment or new position
____ b. Looking for a promotion
____ c. Meeting the certificate requirements
____ d. Upgrading vocational knowledge and skills
____ e. Self-fulfillment
____ f. General interest

PART II: YOUR WORK VALUES

Each item begins with an introductory phrase and is followed by a series of statements. For each item, read both the phrase and the completion statement, and then indicate what you believe most accurately represents your own feeling by circling the appropriate choice on the scale provided.

Strongly Agree.....	SA
Agree.....	A
Uncertain or Undecided.....	U
Disagree.....	D
Strongly Disagree.....	SD

Example:

Work values differ from person to person..... SA A U D SD

A. I should work because:

1) work can provide me with a feeling of accomplishment..... SA A U D SD
2) work can provide me with the chance to acquire new skills... SA A U D SD
3) work can provide me with an opportunity to help society..... SA A U D SD
4) work can provide me with the money to enjoy my leisure time. SA A U D SD
5) life would be very dull if I did not work..... SA A U D SD

B. Work will provide me with a sense of accomplishment when:

6) I am told by my supervisor or manager what a fine job I am doing..... SA A U D SD
7) I earn enough from a job to live comfortably..... SA A U D SD
8) I develop my skills to the fullest extent possible..... SA A U D SD
9) I have used my time so as not to waste it..... SA A U D SD
10) I gain status in the field I choose to work in..... SA A U D SD

C. A job which offers me the opportunity to display my talents is important because:

11) this will increase my desire to learn new skills and knowledge..... SA A U D SD
12) I will make more money if given the opportunity to display my best talents..... SA A U D SD
13) I will feel personally fulfilled if I am able to do this.... SA A U D SD
14) if I am not able to do this, I will probably quickly become bored with work..... SA A U D SD
15) this is the best way for me to achieve prestige in the field I choose to work in..... SA A U D SD

D. Working is especially <u>enjoyable</u> for me when:

16) I feel I am being appropriately rewarded for my efforts..... SA A U D SD
17) I feel I am improving my job-related skills..... SA A U D SD
18) I feel I am providing an important service to society..... SA A U D SD
19) People close to me recognize me with added respect..... SA A U D SD
20) I feel I am not made to do "unimportant tasks"..... SA A U D SD

E. For me, an important aspect of taking on <u>challenging</u> work is:

21) the pride I will feel after taking on the challenge..... SA A U D SD
22) the contribution I will make to the organization by completing challenging tasks..... SA A U D SD
23) the economic rewards I may receive from taking on challenging work..... SA A U D SD
24) that this will enable me to avoid doing routine "non-challenging" work..... SA A U D SD
25) that completing such tasks will probably enable me to increase my status within the company..... SA A U D SD

F. I consider a job to be worthwhile when:

26) it enable me to use my abilities..... SA A U D SD
27) it enable me to avoid feeling "being left out" or having little value as a person..... SA A U D SD
28) it provide me with opportunities to gain status in the company..... SA A U D SD
29) it allows me to accomplish a lot, according to my own standards..... SA A U D SD
30) it enable me to make a contribution to society..... SA A U D SD

G. The benefit of having a job that I know will be permanent is:

31) the financial security that is assured by permanent work.... SA A U D SD
32) the opportunity for me to make a long-term contribution to a comapny..... SA A U D SD
33) the satisfaction I will feel by knowing that I will always be working..... SA A U D SD
34) knowing that I will not have to be troubled with finding a job at a later time..... SA A U D SD
35) the chance I will have to develop my skills to the fullest extent possible..... SA A U D SD

H. An important kind of satisfaction that a job can provide me with is:

36) the personal satisfaction I will feel after completing a day's work..... SA A U D SD
37) the satisfaction of knowing I am making a contribution to society..... SA A U D SD
38) the satisfaction I will feel from being able to buy things I want with my earnings and savings..... SA A U D SD
39) the satisfaction I will feel by using my job-related skills. SA A U D SD
40) the satisfaction I will obtain from a high level position in an organization..... SA A U D SD

I. Being given extra responsibilities by my employer will be important to me because:

41) being chosen over others for this work will be personally satisfying..... SA A U D SD
42) being chosen for this extra work will help to eliminate the monotony of everyday work..... SA A U D SD
43) extra pay may go along with these extra responsibilities.... SA A U D SD
44) this will enable me to make a greater contribution to my employer..... SA A U D SD
45) carrying out these responsibilities successfully may lead to a job-position advancement for me..... SA A U D SD

J. For me, an important aspect of job <u>advancement</u> is:

46) when I have shown my coworkers and friends that I have abilities..... SA A U D SD
47) the advancement in the skills I acquire..... SA A U D SD
48) the advancement in my satisfaction with work..... SA A U D SD

If you have any feelings that you wish to express about work, please do so by writing in the space provided below. Thank you again for you cooperation.

APPENDIX B

DUNCAN'S SOCIOECONOMIC INDEX

("N.e.c." means "not elsewhere classified.")

Occupation Code	Duncan SEI Score	PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS
001	77	Accountants
002	85	Architects
		Computer specialists
003	65	Computer programmers
004	65	Computer systems analysts
005	65	Computer specialists, n.e.c.
		Engineers
006	87	Aeronautical and astronautical engineers
010	90	Chemical engineers
011	84	Civil engineers
012	84	Electrical and electronic engineers
013	86	Industrial engineers
014	80	Mechanical engineers
015	83	Metallurgical and materials engineers
020	85	Mining engineers
021	81	Petroleum engineers
022	87	Sales engineers
023	87	Engineers, n.e.c.
024	83	Farm management advisors
025	48	Foresters and conservationists
026	83	Home management advisors
		Lawyers and judges
030	93	Judges
031	92	Lawyers
		Librarians, archivists, and curators
032	60	Librarians
033	75	Archivists and curators
		Mathematical specialists
034	81	Actuaries
035	80	Mathematicians
036	81	Statisticians
		Life and physical scientists
042	80	Agricultural scientists
043	62	Atmospheric and space scientists
044	80	Biological scientists
045	79	Chemists
051	80	Geologists
052	80	Marine scientists
053	80	Physicists and astronomers
054	77	Life and physical scientists, n.e.c.
055	68	Operations and systems researchers and analysts
056	84	Personnel and labor relations workers

Occupation Code	Duncan SEI Score	PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS--Continued
		Physicians, dentists, and related practitioners
061	75	Chiropractors
062	96	Dentists
063	79	Optometrists
064	81	Pharmacists
065	92	Physicians, medical and osteopathic
071	58	Podiatrists
072	78	Veterinarians
073	58	Health practitioners, n.e.c
		Nurses, dietitians, and therapists
074	39	Dietitians
075	44	Registered nurses
076	60	Therapists
		Health technologists and technicians
080	48	Clinical laboratory technologists and technicians
081	48	Dental hygienists
082	60	Health record technologists and technicians
083	48	Radiologic technologists and technicians
084	48	Therapy assistants
085	52	Health technologists and technicians, n.e.c.
		Religious workers
086	52	Clergymen
090	57	Religious workers, n.e.c.
		Social scientists
091	74	Economists
092	81	Political scientists
093	81	Psychologists
094	81	Sociologists
095	65	Urban and regional planners
096	81	Social scientists, n.e.c.
		Social and recreation workers
100	64	Social workers
101	67	Recreation workers
		Teachers, college and university
102	84	Agriculture teachers
103	84	Atmospheric, earth, marine, and space teachers
104	84	Biology teachers
105	84	Chemistry teachers

Occupation Code	Duncan SEI Score	PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS--Continued
110	84	Physics teachers
111	84	Engineering teachers
112	84	Mathematics teachers
113	84	Health specialties teachers
114	84	Psychology teachers
115	84	Business and commerce teachers
116	84	Economics teachers
120	84	History teachers
121	84	Sociology teachers
122	84	Social science teachers, n.e.c.
123	53	Art, drama, and music teachers
124	64	Coaches and physical education teachers
125	84	Education teachers
126	84	English teachers
130	84	Foreign language teachers
131	72	Home economics teachers
132	84	Law teachers
133	84	Theology teachers
134	84	Trade, industrial, and technical teachers
135	84	Miscellaneous teachers, college and university
140	84	Teachers, college and university, subject not specified
		Teachers, except college and university
141	61	Adult education teachers
142	71	Elementary school teachers
143	72	Prekindergarten and kindergarten teachers
144	70	Secondary school teachers
145	62	Teachers, except college and university, n.e.c.
		Engineering and science technicians
150	62	Agricultural and biological technicians, except health
151	62	Chemical technicians
152	67	Draftsmen
153	62	Electrical and electronic engineering technicians
154	64	Industrial engineering technicians
155	62	Mechanical engineering technicians
156	53	Mathematical technicians
161	48	Surveyors
162	62	Engineering and science technicians, n.e.c.
		Technicians, except health, and engineering and science
163	79	Airplane pilots
164	69	Air traffic controllers
165	61	Embalmers
170	48	Flight engineers
171	69	Radio operators
172	62	Tool programmers, numerical control
173	62	Technicians, n.e.c.
174	65	Vocational and educational counselors
		Writers, artists, and entertainers
175	60	Actors
180	62	Athletes and kindred workers
181	76	Authors
182	45	Dancers
183	71	Designers
184	82	Editors and reporters
185	52	Musicians and composers
190	67	Painters and sculptors
191	50	Photographers
192	82	Public relations men publicity writers
193	65	Radio and television announcers
194	40	Writers, artists, and entertainers, n.e.c.
195	65	Research workers, not specified
		MANAGERS AND ADMINISTRATORS, EXCEPT FARM
201	61	Assessors, controllers, treasurers; local public administration
202	80	Bank officers and financi managers
203	51	Buyers and shippers, farm products
205	72	Buyers, wholesale and ret trade
210	74	Credit men
211	59	Funeral directors
212	74	Health administrators
213	58	Construction inspectors, public administration
215	55	Inspectors, except construction, public administration
216	32	Managers and superintend building
220	74	Office managers, n.e.c.
221	50	Officers, pilots, and pursers; ship

Occupation Code	Duncan SEI Score	MANAGERS AND ADMINISTRATORS, EXCEPT FARM--Continued
222	80	Officials and administrators; public administration, n.e.c.
223	60	Officials of lodges, societies, and unions
224	61	Postmasters and mail superintendents
225	75	Purchasing agents and buyers, n.e.c.
226	59	Railroad conductors
230	38	Restaurant, cafeteria, and bar managers
231	72	Sales managers and department heads, retail trade
233	74	Sales managers, except retail trade
235	78	School administrators, college
240	72	School administrators, elementary and secondary
245	62	Managers and administrators, n.e.c.
		SALES WORKERS
260	66	Advertising agents and salesmen
261	40	Auctioneers
262	35	Demonstrators
264	09	Hucksters and peddlers
265	66	Insurance agents, brokers, and underwriters
266	27	Newsboys
270	62	Real estate agents and brokers
271	72	Stock and bond salesmen
280	41	Salesmen and sales clerks, n.e.c.
		CLERICAL AND UNSKILLED WORKERS
301	52	Bank tellers
303	44	Billing clerks
305	51	Bookkeepers
310	44	Cashiers
311	44	Clerical assistants, social welfare
312	44	Clerical supervisors, n.e.c.
313	43	Collectors, bill and account
314	44	Counter clerks, except food
315	40	Dispatchers and starters, vehicle
320	44	Enumerators and interviewers
321	59	Estimators and investigators, n.e.c.
323	44	Expediters and production controllers
325	44	File clerks
326	62	Insurance adjusters, examiners, and investigators
330	44	Library attendants and assistants
331	53	Mail carriers, post office

Occupation Code	Duncan SEI Score	CLERICAL AND UNSKILLED WORKERS--Continued
332	43	Mail handlers, except post off.
333	28	Messengers and office boys
334	44	Meter readers, utilities
		Office machine operators
341	45	Bookkeeping and billing machine operators
342	45	Calculating machine operators
343	45	Computer and peripheral equipment operators
344	45	Duplicating machine operators
345	45	Key punch operators
350	45	Tabulating machine operators
355	45	Office machine operators,
360	44	Payroll and timekeeping clerks
361	45	Postal clerks
362	44	Proofreaders
363	68	Real estate appraisers
364	44	Receptionists
		Secretaries
370	61	Secretaries, legal
371	61	Secretaries, medical
372	62	Secretaries, n.e.c.
374	24	Shipping and receiving clerks
375	44	Statistical clerks
376	61	Stenographers
381	44	Stock clerks and storekeepers
382	63	Teacher aides, exc. school monitors
383	22	Telegraph messengers
384	47	Telegraph operators
385	45	Telephone operators
390	60	Ticket, station, and express agents
391	61	Typists
392	42	Weighers
394	44	Miscellaneous clerical workers
395	44	Not specified clerical workers
		CRAFTSMEN AND KINDRED WORKERS
401	22	Automobile accessories install.
402	22	Bakers
403	16	Blacksmiths
404	33	Boilermakers
405	39	Bookbinders
410	27	Brickmasons and stonemasons
411	32	Brickmasons and stonemasons, apprentices
412	20	Bulldozer operators
413	22	Cabinetmakers
415	19	Carpenters
416	31	Carpenter apprentices
420	12	Carpet installers
421	19	Cement and concrete finishers

Occupation Code	Duncan SEI Score	CRAFTSMEN AND KINDRED WORKERS--Continued
422	52	Compositors and typesetters
423	40	Printing trades apprentices, exc. pressmen
424	21	Cranemen, derrickmen, and hoistmen
425	40	Decorators and window dressers
426	48	Dental laboratory technicians
430	44	Electricians
431	37	Electrician apprentices
433	49	Electric power linemen and cablemen
434	55	Electrotypers and stereotypers
435	47	Engravers, exc. photoengravers
436	23	Excavating, grading, and road machine operators; exc. bulldozer
440	17	Floor layers, exc. tile setters
441	49	Foremen, n.e.c.
442	23	Forgemen and hammermen
443	18	Furniture and wood finishers
444	40	Furriers
445	25	Glaziers
446	22	Heat treaters, annealers, and temperers
450	22	Inspectors, scalers, and graders; log and lumber
452	41	Inspectors, n.e.c.
453	36	Jewelers and watchmakers
454	34	Job and die setters, metal
455	58	Locomotive engineers
456	45	Locomotive firemen
461	33	Machinists
462	41	Machinist apprentices
		Mechanics and repairmen
470	27	Air conditioning, heating, and refrigeration
471	48	Aircraft
472	19	Automobile body repairmen
473	19	Automobile mechanics
474	25	Automobile mechanic apprentices
475	27	Data processing machine repairmen
480	27	Farm implement
481	27	Heavy equipment mechanics, incl. diesel
482	27	Household appliance and accessory installers and mechanics
483	10	Loom fixers
484	36	Office machine
485	36	Radio and television
486	21	Railroad and car shop
491	34	Mechanic, exc. auto, apprentices
492	27	Miscellaneous mechanics and repairmen
495	27	Not specified mechanics and repairmen

Occupation Code	Duncan SEI Score	CRAFTSMEN AND KINDRED WORKERS--Continued
501	19	Millers; grain, flour, and feed
502	31	Millwrights
503	12	Molders, metal
504	33	Moldar apprentices
505	43	Motion picture projectionists
506	39	Opticians, and lens grinders polishers
510	16	Painters, construction and maintenance
511	29	Painter apprentices
512	14	Paperhangers
514	43	Pattern and model makers, exc. paper
515	63	Photoengravers and lithographer
516	38	Piano and organ tuners and repairmen
520	25	Plasterers
521	29	Plasterer apprentices
522	34	Plumbers and pipe fitters
523	33	Plumber and pipe fitter apprentices
525	50	Power station operators
530	46	Pressmen and plate printers, printing
531	40	Pressman apprentices
533	22	Rollers and finishers, metal
534	15	Roofers and slaters
535	33	Sheetmetal workers and tinsmit:
536	33	Sheetmetal apprentices
540	34	Shipfitters
542	12	Shoe repairmen
543	17	Sign painters and letterers
545	45	Stationary engineers
546	24	Stone cutters and stone carver
550	34	Structural metal craftsmen
551	22	Tailors
552	49	Telephone installers and repairman
554	49	Telephone linemen and splicers
560	28	Tile setters
561	49	Tool and die makers
562	41	Tool and die maker apprentices
563	21	Upholsterers
571	35	Specified craft apprentices, n.e.c.
572	39	Not specified apprentices
575	25	Craftsmen and kindred workers, n.e.c.
580	-4	Former members of the Armed Forces
		OPERATIVES, EXCEPT TRANSPORT
601	32	Asbestos and insulation worker

Occupation Code	Duncan SEI Score	OPERATIVES, EXCEPT TRANSPORT--Continued
602	18	Assemblers
603	11	Blasters and powdermen
604	18	Bottling and canning operatives
605	25	Chainmen, rodmen, and axmen; surveying
610	19	Checkers, examiners, and inspectors; manufacturing
611	18	Clothing ironers and pressers
612	19	Cutting operatives, n.e.c.
613	23	Dressmakers and seamstresses, except factory
614	24	Drillers, earth
615	25	Dry wall installers and lathers
620	12	Dyers
621	20	Filers, polishers, sanders, and buffers
622	18	Furnacemen, smeltermen, and pourers
623	18	Garage workers and gas station attendants
624	17	Graders and sorters, manufacturing
625	12	Produce graders and packers, except factory and farm
626	29	Heaters, metal
630	15	Laundry and dry cleaning operatives, n.e.c.
631	29	Meat cutters and butchers, exc. manufacturing
633	16	Meat cutters and butchers, manufacturing
634	18	Meat wrappers, retail trade
635	20	Metal platers
636	46	Milliners
640	16	Mine operatives, n.e.c.
641	18	Mixing operatives
642	15	Oilers and greasers, exc. auto
643	18	Packers and wrappers, except meat and produce
644	18	Painters, manufactured articles
645	42	Photographic process workers
		Precision machine operatives
650	25	Drill press operatives
651	22	Grinding machine operatives
652	22	Lathe and milling machine operatives
653	21	Precision machine operatives, n.e.c.
656	19	Punch and stamping press operatives
660	20	Riveters and fasteners
661	16	Sailors and deckhands
662	05	Sawyers
663	18	Sewers and stitchers
664	09	Shoemaking machine operatives
665	24	Solderers
666	17	Stationary firemen
		Textile operatives
670	03	Carding, lapping, and combing operatives
671	21	Knitters, loopers, and toppers
672	04	Spinners, twisters, and winders
673	06	Weavers
674	06	Textile operatives, n.e.c.
680	24	Welders and flame-cutters
681	20	Winding operatives, n.e.c.
690	19	Machine operatives, miscellaneous specified
692	19	Machine operatives, not specific
694	19	Miscellaneous operatives
695	19	Not specified operatives
		TRANSPORT EQUIPMENT OPERATIVES
701	24	Boatmen and canalmen
703	34	Bus drivers
704	33	Conductors and motormen, urban rail transit
705	31	Deliverymen and routemen
706	17	Fork lift and tow motor operatives
710	03	Motormen; mine, factory, logging camp, etc.
711	19	Parking attendants
712	42	Railroad brakemen
713	44	Railroad switchmen
714	10	Taxicab drivers and chauffeurs
715	15	Truck drivers
		LABORERS, EXCEPT FARM
740	17	Animal caretakers, exc. farm
750	07	Carpenters' helpers
751	07	Construction laborers, exc. carpenter's helpers
752	11	Fishermen and oystermen
753	09	Freight and material handlers
754	08	Garbage collectors
755	11	Gardeners and groundskeepers, exc. farm
760	11	Longshoremen and stevedores
761	04	Lumbermen, raftsmen, and woodchoppers
762	17	Stock handlers
763	08	Teamsters
764	08	Vehicle washers and equipment cleaners
770	08	Warehousemen, n.e.c.
780	08	Miscellaneous laborers
785	08	Not specified laborers

Occupation Code	Duncan SEI Score	
		FARMERS AND FARM MANAGERS
801	14	Farmers (owners and tenants)
802	36	Farm managers
		FARM LABORERS AND FARM FOREMEN
821	20	Farm foremen
822	06	Farm laborers, wage workers
823	17	Farm laborers, unpaid family workers
824	22	Farm service laborers, self-employed
		SERVICE WORKERS, EXC. PRIVATE HOUSEHOLD
		Cleaning service workers
901	13	Chambermaids and maids, except private household
902	08	Cleaners and charwomen
903	13	Janitors and sextons
		Food service workers
910	19	Bartenders
911	11	Busboys
912	15	Cooks, except private household
913	11	Dishwashers
914	17	Food counter and fountain workers
915	16	Waiters
916	11	Food service workers, n.e.c., except private household
		Health service workers
921	38	Dental assistants
922	25	Health aides, exc. nursing
923	51	Health trainees
924	37	Lay midwives
925	14	Nursing aides, orderlies, and attendants
926	22	Practical nurses
		Personal service workers
931	31	Airline stewardesses
932	19	Attendants, recreation and amusement
933	26	Attendants, personal service, n.e.c.
934	08	Baggage porters and bellhops
935	17	Barbers
940	30	Boarding and lodging house keepers
941	08	Bootblacks
942	28	Child care workers, exc. private household
943	10	Elevator operators
944	17	Hairdressers and cosmetologists
945	31	Personal service apprentices
950	31	Housekeepers, exc. private household
952	26	School monitors
953	25	Ushers, recreation and amusement
954	11	Welfare service aides
		Protective service workers
960	18	Crossing guards and bridge tenders
961	37	Firemen, fire protection
962	18	Guards and watchmen
963	21	Marshals and constables
964	41	Policemen and detectives
965	34	Sheriffs and bailiffs
		PRIVATE HOUSEHOLD WORKERS
980	07	Child care workers, private household
981	07	Cooks, private household
982	11	Housekeepers, private household
983	12	Laundresses, private house
984	07	Maids and servants, private household

(Sourse: National Longitudinal Survey of Labor Market Experience. (1982). Handbook. Columbus, OH: Center for Huaman Resourse Research, The Ohio State University.)

APPENDIX C

A DESCRIPTION OF THE OCCUPATIONAL AREAS

AGRICULTURAL TECHNOLOGIES

- Agri-business
- Agricultural
- Animal Science
- Food Processing & Distribution
- Forestry
- Horticulture
- Pulp & Paper
- Soils

BUSINESS-RELATED TECHNOLOGIES

- Accounting
- Advertising/Marketing
- Banking & Finance
- Business Administration
- Data Processing & System Analysis
- Hospitality(Hotel, Motel, & Resturant Management)
- Insurance
- Management & Supervision
- Merchandising
- Office Machines
- Personnel
- Real Estate
- Retail Management
- Secretarial Science
- Statistical

CIVIL TECHNOLOGIES

- Architectural Drafting
- Architectural Engineering
- Building Construction
- Civil
- Construction
- Highway
- Mansnry
- Structural engineering & Design
- Surveying

CONSUMER SCIENCE

- Apparel Design/Manufacturing
- Culinary
- Food Processing & Distribution
- Interior Design
- Upholstery

ELECTRICAL/ELECTRONICS TECHNOLOGIES

- Aviation Electronics
- Commercial Broadcast
- Computer Maintenance
- Electrical
- Electro-Mechanical
- Electro-Mechanical Drafting
- Electronic
- Electronic Communication
- Electronic Drafting
- Industrial Electronics
- Microminiaturization
- Radio & TV

ENVIRONMENTAL CONTROL TECHNOLOGIES

Air, Water, & Wastewater
Environmental
Natural Resources Management & Conservation
Sanitary Engineering

HEALTH TECHNOLOGIES

Biomedical
Dental
Dental Assistant
Dietetics
Emergency Medical
Health
Inhalation/Respiratory Therapy
Lab Technician
Medical
Medical Assistant
Medical Laboratory
Medical Records
Mental Health
Nuclear Medicine
Nursing
Occupational Therapystant
Operation Room Assistant
Optical
Pharmacy Assistant
Physical Therapy
Prosthetics & Orthotics
Psychiatric
Radiation
X-Ray

INDUSTRIAL TECHNOLOGIES

Ceramic
Chemical
Engineering Science
Forest Products
Graphic Arts
Industrial
Instrumentation
Lithographic
Metallurgical
Nucleonics/Nuclear Engineering
Numerical Control
Occupational Safety
Photographic
Plastics
Ouality Control
Technical & Industrial Illustration
Textile

MECHANICAL TECHNOLOGIES

Aeronautical
Aeronautical & Astronautical
Air Conditioning, Heating, & Refrigeration
Appliance Service
Auto Body
Auto-Diesel
Automotive
Aviation/Aviation Maintenance
Combustion Power
Diesel
Drafting
Drafting & Tool Design
Fluid Power
Heavy Equipment Operation/ Service
Hydaulics
Industrial Drafting & Design
Internal Combustion
Machine Tool
Mechanical
Mechanical & Production
Sheet Metal
Small Engine Mechanics
Welding

PUBLIC SERVICE TECHNOLOGIES

Child Growth & Care
Community Service
Correctional Science
Court Reporting
Early Childhood Education
Fire Science
Library Science
Legal
Police Science
Recreation
Social Welfare & Service

MISCELLANEOUS TECHNOLOGIES

Air Transport
Broadcasting
Commercial Arts & Design
Cosmetology
Criminal Justice
Journalism
Marine
Mortuary Science
Oceangraphy
Special Education
Technical Writing
Transportation
Urban Engineering (Planning)

(Source: Technician education yearbook. (1980). Ann Arbor, MI: Prakken Publications, Inc.)